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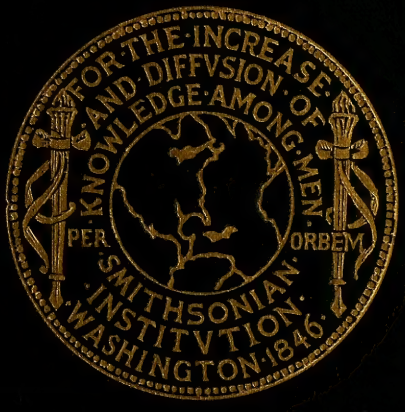

FRONT VIEW OF NATURAL HISTORY BUILDING, UNITED STATES NATIONAL MUSEUM

SMITHSONIAN INSTITUTION

UNITED STATES NATIONAL MUSEUM

REPORT ON THE PROGRESS AND CONDITION OF THE UNITED STATES NATIONAL MUSEUM FOR THE YEAR ENDED JUNE 30, 1929

UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON : 1929

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United States National Museum,
Under Direction of the Smithsonian Institution,
Washington, D. C., October 15, 1929.

Sir: I have the honor to submit herewith a report upon the present condition of the United States National Museum and upon the work accomplished in its various departments during the fiscal year ended June 30, 1929.

Very respectfully,

Alexander Wetmore,
Assistant Secretary.

Dr. Charles G. Abbot,
Secretary, Smithsonian Institution.

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STAFF OF UNITED STATES NATIONAL MUSEUM

[June 30, 1929]

CHARLES G. ABBOT, Secretary of the Smithsonian Institution, keeper *ex officio*.
ALEXANDER WETMORE, Assistant Secretary, Smithsonian Institution, in charge United States National Museum.
WILLIAM DEC. RAVENEL, Administrative Assistant to the Secretary.

SCIENTIFIC STAFF

DEPARTMENT OF ANTHROPOLOGY:

Walter Hough, head curator.

Division of Ethnology: Walter Hough, curator; H. W. Krieger, curator; H. B. Collins, jr., assistant curator; J. W. Fewkes, collaborator; Arthur P. Rice, collaborator; Isobel H. Lenman, collaborator.

Section of Musical Instruments: Hugo Worch, custodian.

Section of Ceramics: Samuel W. Woodhouse, collaborator.

Division of Archeology: Neil M. Judd, curator; R. B. Paine, aide.

Division of Physical Anthropology: Aleš Hrdlička, curator; Thomas D. Stewart, aide.

Collaborator in anthropology: George Grant MacCurdy.

Associate in historic archeology: Cyrus Adler.

DEPARTMENT OF BIOLOGY:

Leonhard Stejneger, head curator; James E. Benedict, assistant curator; W. L. Brown, chief taxidermist.

Division of Mammals: Gerrit S. Miller, jr., curator; Remington Kellogg, assistant curator; A. J. Poole, scientific aide; A. Brazier Howell, collaborator.

Division of Birds: Charles W. Richmond, associate curator; J. H. Riley, assistant curator; Alexander Wetmore, custodian of alcoholic and skeleton collections; Edward J. Brown, collaborator; Casey A. Wood, collaborator; Arthur C. Bent, collaborator.

Division of Reptiles and Batrachians: Leonhard Stejneger, curator; Doris M. Cochran, assistant curator.

Division of Fishes: Barton A. Bean, assistant curator; E. D. Reid, aide.

Division of Insects: L. O. Howard, honorary curator; J. M. Aldrich, associate curator; William Schaus, honorary assistant curator; B. Preston Clark, collaborator.

Section of Hymenoptera: S. A. Rohwer, custodian; W. M. Mann, assistant custodian; Robert A. Cushman, assistant custodian.

Section of Myriapoda: O. F. Cook, custodian.

Section of Diptera: J. M. Aldrich, in charge; Charles T. Greene, assistant custodian.

Section of Coleoptera: L. L. Buchanan, specialist for Casey collection of coleoptera.

Section of Lepidoptera: J. T. Barnes, collaborator.

Section of Orthoptera: A. N. Caudell, custodian.

Section of Hemiptera: W. L. McAtee, acting custodian.

Section of Forest Tree Beetles: A. D. Hopkins, custodian.

DEPARTMENT OF BIOLOGY—Continued.

Division of Marine Invertebrates: Waldo L. Schmitt, curator; C. R. Shoemaker, assistant curator; James O. Maloney, aide; Mrs. Harriet Richardson Searle, collaborator; Max M. Ellis, collaborator; William H. Longley, collaborator; Maynard M. Metcalf, collaborator; Joseph A. Cushman, collaborator in Foraminifera.

Division of Mollusks: Paul Bartsch, curator; William B. Marshall, assistant curator; Mary Breen, collaborator.

Section of Helminthological Collections: C. W. Stiles, custodian; M. C. Hall, assistant custodian.

Division of Echinoderms: Austin H. Clark, curator.

Division of Plants (National Herbarium): Frederick V. Coville, honorary curator; W. R. Maxon, associate curator; Ellsworth P. Killip, associate curator; Emery C. Leonard, assistant curator; Conrad V. Morton, aide; Egbert H. Walker, aide; Albert C. Smith, collaborator; John A. Stevenson, custodian of C. G. Lloyd Mycological Collection.

Section of Grasses: Albert S. Hitchcock, custodian.

Section of Cryptogamic Collections: O. F. Cook, assistant curator.

Section of Higher Algae: W. T. Swingle, custodian.

Section of Lower Fungi: D. G. Fairchild, custodian.

Section of Diatoms: Albert Mann, custodian.

Associates in Zoology: C. Hart Merriam, W. L. Abbott, Mary J. Rathbun, David Starr Jordan.

Associate Curator in Zoology: Hugh M. Smith.

Associate in Marine Sediments: T. Wayland Vaughan.

Collaborator in Zoology: Robert Sterling Clark.

DEPARTMENT OF GEOLOGY:

George P. Merrill, head curator; Margaret W. Moodey, aide.

Division of Physical and Chemical Geology (systematic and applied):

Division of Mineralogy and Petrology: F. W. Clarke, honorary curator; George P. Merrill, curator.

W. F. Foshag, assistant curator; Frank L. Hess, custodian of rare metals and rare earths.

Division of Stratigraphic Paleontology: R. S. Bassler, curator; Charles E. Resser, associate curator; Jessie G. Beach, aide.

Section of Invertebrate Paleontology: T. W. Stanton, custodian of Mesozoic collection; Paul Bartsch, curator of Cenozoic collection.

Section of Paleobotany: David White, associate curator.

Division of Vertebrate Paleontology: Charles W. Gilmore, curator; James W. Gidley, assistant curator of mammalian fossils.

Associate in Mineralogy: W. T. Schaller.

Associate in Paleontology: E. O. Ulrich.

Associate in Petrology: Whitman Cross.

DEPARTMENT OF ARTS AND INDUSTRIES, AND DIVISION OF HISTORY:

William deC. Ravenel, director.

Divisions of Mineral and Mechanical Technology: Carl W. Mitman, curator; Paul E. Garber, assistant curator; F. A. Taylor, assistant curator; Chester G. Gilbert, honorary curator of mineral technology.

Division of Textiles: Frederick L. Lewton, curator; Mrs. E. W. Rosson, aide.

Section of Wood Technology: William N. Watkins, assistant curator.

Section of Organic Chemistry: Aida M. Doyle, aide.

Division of Medicine: Charles Whitebread, assistant curator.

DEPARTMENT OF ARTS AND INDUSTRIES, AND DIVISION OF HISTORY—Continued.

Division of Graphic Arts: R. P. Tolman, assistant curator.

Section of Photography: A. J. Olmsted, custodian.

Loeb Collection of Chemical Types: O. E. Roberts, jr., curator.

Division of History: T. T. Belote, curator; Charles Carey, assistant curator; Mrs. C. L. Manning, philatelist.

ADMINISTRATIVE STAFF

Chief of correspondence and documents, H. S. Bryant.
Superintendent of buildings and labor, J. S. Goldsmith.
Editor, Marcus Benjamin.
Engineer, C. R. Denmark.
Disbursing agent, N. W. Dorsey.
Photographer, A. J. Olmsted.
Property clerk, W. A. Knowles.
Assistant librarian, Isabel L. Towner.

REPORT OF THE PROGRESS AND CONDITION OF THE UNITED STATES NATIONAL MUSEUM FOR THE YEAR ENDED JUNE 30, 1929

By Alexander Wetmore
Assistant Secretary, Smithsonian Institution

FOREWORD

The Congress of the United States in the act of August 10, 1846, founding the Smithsonian Institution, recognized that an opportunity was afforded, in carrying out the design of Smithson for the increase and diffusion of knowledge, to provide for the custody of the Museum of the Nation. To this new establishment was, therefore, intrusted the care and development of the national collections. At first the cost of maintaining this activity was paid from the Smithsonian income; then for a time the Government bore a share; but since 1877 Congress has provided for the expenses of the Museum.

The museum idea was fundamental in the organic act establishing the Smithsonian Institution, which was based upon a 12-year discussion in Congress and the advice of the most distinguished scientific men, educators, and intellectual leaders of the Nation during the years 1834 to 1846. It is interesting to note how broad and comprehensive were the views which actuated the Congress in determining the scope of the Museum, a fact especially remarkable when it is recalled that at that date no museum of considerable size existed in the United States, and the museums of England and of the continent of Europe, although containing many rich collections, were still to a large extent without a developed plan.

The Congress which passed the act of foundation enumerated as within the scope of the Museum "all objects of art and of foreign and curious research and all objects of natural history, plants, and geological and mineralogical specimens belonging to the United States," thus indicating the Museum at the very outset as the Museum of the United States and as one of the widest range in its activities. It was appreciated that additions would be necessary to the collection then in existence, and provision was made for their increase by the exchange of duplicate specimens, by donations, and by other means.

The maintenance of the Museum was long ago assumed by Congress, the Smithsonian Institution taking upon itself only so much of the necessary responsibility for its administration as is required

to coordinate it with its other activities. The Museum as a part of the Smithsonian is an integral part of a broad organization for increase and diffusion of knowledge, for scientific research, for cooperation with departments of the Government, with universities and scientific societies in America, and with all scientific institutions and men abroad who seek interchange of views with men of science in the United States.

Since 1846 the only material changes in the scope of the National Museum have been (1) the addition of a department of American history, intended to illustrate, by an appropriate assemblage of objects, important events, the domestic life of the country from the colonial period to the present time, and the lives of distinguished personages, and (2) provision, in 1920, for the separate administration of the National Gallery of Art as a coordinate unit under the Smithsonian Institution. From 1906 to 1920 the gallery was administered as the department of fine arts of the Museum.

The development of the Museum has been greatest in those subjects which the conditions of the past three-quarters of a century have made most fruitful—the natural history, geology, ethnology, and archeology of the United States, which have been supplemented extensively by collections from other countries of the world. Opportunities for acquisition in these various directions in the first years of the institution were mainly brought about through the activities of the scientific and economic surveys of the Government, many of which have been the direct outgrowths of earlier explorations stimulated or directed by the Smithsonian Institution. Additions from these sources still continue in large volume. As supplemental to them an increasing number of persons interested in science make annual additions to our collections either directly or through financial support of expeditions by members of the staff. The increment of material from these contributions increases annually and is greatly appreciated. Such outside aid brings material that is of the greatest importance and that often could be obtained in no other way.

The Centennial Exhibition of 1876 afforded opportunity for establishing a department of industrial arts, which has received great impetus recently through the cooperation of industrial firms and associations, particularly in the assembling of material illustrative of historical development in various lines.

The historical series has been greatly augmented since 1918 by large collections illustrative of the World War, and also by extensive additions to exhibits in aircraft and kindred subjects that have been received during this period.

Public interest in the growth and development of the National Museum is reflected by the steady increase of recorded attendance, in correspondents, and in requests for information.

OPERATIONS OF THE YEAR

APPROPRIATIONS

Provision for the maintenance of the National Museum for the fiscal year ended June 30, 1929, was made in the regular items of appropriation carried in the executive and independent offices act approved May 16, 1928, and in special items carried in the second deficiency act for the fiscal year 1929, approved May 4, 1929, as follows:

Preservation of collections	$559,304
Furniture and fixtures	30,800
Heating and lighting	90,160
Building repairs	18,810
Books	2,000
Postage	450
Printing and binding	46,500
	748,024

Provision for safeguarding the dome of the rotunda of the Natural History Building was granted in the first deficiency act for the fiscal year 1928, approved December 22, 1927, with provision that the sum remain available until June 30, 1929. By this act $80,000 was appropriated, the work to be performed under the direction and supervision of the Supervising Architect, Treasury Department. A statement regarding the progress of this work will be given in a later paragraph.

It is gratifying to record that the greater part of the total increase of $97,064 in the regular items over the previous fiscal year was applied to much-needed adjustment in the salaries paid to the Museum staff placing the salary status of the majority of the members on a much more adequate basis than heretofore. Upon proper representation to the Congress in the annual hearings on appropriations, allowance was made for additional funds to provide a one-rate increase under the provisions of the reclassification act for those employees who had attained the proper efficiency ratings. This was followed by the passage of the Welch Act covering governmental salaries in general under which there was a revision of the schedules of the various grades. As a result the majority of the staff have been advanced to the second step in the salary scale for each grade with a few above and a few below this point to leave

this point as an average. The effect of this betterment in economic status was immediate in increased morale in an organization whose members always have been consistently devoted to our best interests. With this accomplished it is highly important to the Smithsonian Institution that further additions to the appropriations be made as soon as practicable to permit the raising of salaries to the average for each grade, when the intent of the classification act so far as this matter is concerned will be fully met. Such action is due as reward for the conscientious performance of duty of those in the various grades of our service.

The increase in funds of $3,000 under furniture and fixtures was provided to give additional storage for the steadily increasing study collections, one third being for lumber and similar materials for the manufacture of additional specimen cases, and the remainder for the purchase of pasteboard boxes, trays, glass jars and vials, insect drawers, and similar containers. The salary rolls under heating and lighting were increased by $3,840 to permit addition of three employees, an engineer, a fireman, and an elevator conductor required for the adequate operation of the heating and lighting plant and for the maintenance of proper elevator service. Of the increase under the item preservation of collections, a part was applied to the establishment of a new position for an assistant curator in the division of mammals, and a part for the purchase of uniforms for guards and elevator conductors on day duty in our buildings. The appropriation for building repairs included an increase of $4,610 to provide for an additional painter on the permanent staff and for the purchase of additional paint materials, together with $2,000 for further cement work on the private roadways leading to the east service entrance. The amount of $500 was added to the appropriation for the purchase of books for the Museum libraries. A further increase of $2,500 came as allotment in the item for printing and binding.

The question of further additions to personnel remains one of importance, as there is growing necessity for further workers both on the scientific staff and in the clerical forces. The National Museum through the many years of its growth has developed along broad lines and maintains extensive collections in many branches. There are several groups of animals where large collections are available with no specialist immediately in charge, a condition that should be remedied. Further, there are divisions where assistants should be provided for older men now in charge who should be in a position to train others to carry on when they themselves are gone. Clerical assistance is at a minimum when the volume of work to be covered is considered, and there is need for more employees of this group to relieve scientific workers of routine work in cataloguing and thus

permit them to devote their time more fully to important scientific investigations. It is now necessary annually to procure the temporary services of additional cataloguers, typists, and laborers to assist in our regular work. These persons should be on the permanent rolls as the work required is specialized and requires considerable training for proper performance which it is not possible to give in a period of temporary employment.

Congeston in the present space occupied by the National Museum collections increases in spite of directive effort to select for preservation only the objects that must be kept and to eliminate material that is not permanently desired. It is imperative to take important collections when they are available as opportunity to secure them may never offer again. As an asset of the Nation the collections of the National Museum should be made as complete as possible while lacking materials are still procurable.

In the last 10 years the exhibition halls devoted to arts and industries and to history have become increasingly more crowded until in many instances there has been brought about decided incongruity in association of exhibits because of need that has arisen for the acceptance of valuable things that when on hand must be afforded space. Space designed for anthropology and zoology has been preempted for displays of objects of art, and other makeshifts have been necessary. In recent years there has been gradual utilization of the halls that serve as passageways until now cases for the storage of study specimens line the walls and to some extent close these lanes. The situation is such that the limit of expansion is practically reached and several divisions are already urgently in need of more space for their research collections than is assigned to them.

The study collections as a whole will grow annually at a steady rate that will not decrease for a considerable period of years at least. Though to one with casual knowledge it might appear that one or two examples of each kind are sufficient it is actually true that good series are imperative for the investigations of the talented workers to whom we look for increase in knowledge concerning the things about us. It is found on close examination that individual insects, birds, mammals, fossils, plants, mollusks, or in fact any other natural materials or organisms, differ from each other in form, color, dimension, and structure, so that a series of specimens is required to show the characters of a single species. Frequently when specimens supposedly the same from a wide geographic range are compared it is found that two or more forms are represented. Scientists and laymen alike properly look to the National Museum for extensive material to demonstrate all these points, some of which may seem to have no particular importance at the time but all of which inevitably

are found eventually to possess some utilitarian value. Our study collections should be the largest and most extensive in the country.

Further housing for the National Museum is imperative. The collections in arts and industries are found at present in the Old National Museum, a building that when it was completed in 1881 was a model of its kind for the world, but with modern progress is now as much out of date as vehicular transportation or the average manufacturing process of that same day when compared with present methods. Further, though carefully constructed originally, at an age of 48 years it is becoming somewhat of a problem to keep it in proper condition, and before long expensive renovations must be contemplated if it is to be retained. This building should be replaced by one of modern design that will afford a much greater area of floor space, with halls properly designed in form to meet modern needs. The new building should stand in part on the site occupied by the old one but will need to cover considerably more ground to provide for our need. Modern advances in manufacturing processes are tremendous and so overshadow the modest beginnings of some of our industries that they will be completely forgotten by the coming generation. There should be preserved in the National Museum exhibits to show the essential steps in the development in all branches of transportation, engineering, and commerce. These will have inestimable value in affording material studies on which further advances may be made and in the education of our modern youth.

The ultimate construction of a National Gallery of Art to which the art collections will be removed will free a certain amount of space in the Natural History Building, but that area will be absorbed automatically by the natural history exhibits retired to make room for art, and will not afford necessary relief. There should be added to the Natural History Building two wings, one on the east and one on the west, in accordance with the original plan of the architect for this structure. These, with the same height as the present building, will give needed space for the tremendously valuable research collections and will relieve crowded laboratories, which in the division of insects, for example, have become almost intolerable because of the increasing number of persons necessarily engaged in important researches on our collections, so that in some instances four persons depend upon the light from a single window for illumination for work requiring delicate examination, frequently under the microscope. The additional floor space would also afford a more logical arrangement of exhibits, a remodeling of many in more modern form, which can not be attempted at present, and a relief from present crowding, which is often tiring and confusing to the visitor.

The division of history, one of the greatest importance to every patriotic American, with its wonderful series of memorabilia of those to whom we owe our country and our freedom, its collections of weapons, war materials, historical objects of all kinds, and extensive series of coins and stamps, at present has its exhibits distributed through the Natural History, and Arts and Industries Buildings, in a manner wholly incongruous to orderly display. There should be provided for it a separate building where its treasures may be adequately shown for the admiration and reverence of our people for generations to come. Certainly all these historic objects, not to be duplicated at any price, should be displayed under the best of conditions as a monument to those whom they represent and to previous generations in our Nation.

Existing appropriations are taken up so largely with necessary routine expenditures that there is little available to be used in exploration and field work. Many interested friends and correspondents make great additions to our collections annually, but the Museum should be provided with adequate funds that would enable it to develop various field researches along logical and continuing lines. There come to the Museum frequent reports of valuable specimens that may be had if some one competent can go to the spot to obtain them. These are usually of such nature that they can not be collected and sent in by the inexperienced as unless properly handled they are not worth the cost of transportation, though when suitably prepared they are highly valuable. At the present time this material is usually lost, though for a comparatively small expenditure it might be preserved. Funds that may be used for such purposes and for field work in general are urgently needed.

It may be added that in the United States to-day there is an increasing part of the population that is definitely interested in science. This is shown in the present demand for authentic scientific news on the part of the press, for photographs of interesting scientific objects for publication, and by the general attitude of the public. As our country grows there develops an increasing group of those financially independent who turn to scientific researches and investigations either as recreation or with serious desire to assist in addition to human knowledge, and who find in scientific matters relaxation and inspiration, recreation and serious endeavor. This group now assists tremendously in the furtherance of scientific development and will be an increasing force in that direction in the future. These persons from their financial situation make large contributions toward the Federal income in the form of taxes, wherefore it would seem logical to make a part of the money

derived from them available for support of their immediate interests in the form of increased appropriations for the National Museum.

COLLECTIONS

Additions to the collections for the present fiscal year include large and valuable accretions to the series in all departments of the Museum. The increments were covered in 1,706 separate accessions which included a total of 545,191 separate objects, a number not quite equal to that of the previous year but which indicates a tremendous growth. The specimens indicated were divided among the various departments as follows: Anthropology, 4,831; biology, 520,701; geology, 12,418; arts and industries, 2,208; history, 5,033. The total increase for last year came to 832,912.

As in previous years the large additions for the year 1929 were due principally to accessions under the department of biology. Noteworthy among these was the receipt of the highly valuable collections of mammals, birds, and insects left to the Museum by the late Col. Wirt Robinson; the collections of birds and plants secured by Dr. Joseph F. Rock, transferred by the National Geographic Society; the collections of insects, mollusks, and crustaceans secured by Dr. D. C. Graham; the materials forwarded by Dr. Hugh M. Smith from Siam; and the plants secured in Haiti by E. C. Leonard, together with specimens collected in the same Republic by A. J. Poole and W. M. Perrygo. The last two came through the cooperation of Dr. W. L. Abbott, who also presented a collection of Siamese mammals.

In the department of anthropology the archeological material obtained by Henry B. Collins, jr., on St. Lawrence Island is of the highest importance. A further collection that may be mentioned here, though not included in the present accessions, as it came to hand late at the close of the year, is that of cave and midden material obtained by H. W. Krieger in the Dominican Republic during an expedition financed by Dr. W. L. Abbott.

Accessions under the department of geology have embraced many excellent things in the form of meteorites and minerals secured principally through purchase under the income of the Roebling fund. These have included a meteorite weighing 1,060 pounds from New Mexico, a platinum nugget from South America weighing more than 17 ounces, and a cut gem of benitoite weighing 7.7 carats, being the largest known cut stone of this mineral. Through the Chamberlain fund there came a number of excellent additions to the gem collection. The division of stratigraphic paleontology secured valuable types of fossil invertebrates from Bruce Carlton, of the Amerada Petroleum Co., and Dr. Charles Ryniker, of the Gypsy Oil Co.

Valuable additions in the department of arts and industries have included three early types of Winton automobiles; one of the engines of the Army aircraft *Question Mark*, used during an endurance test that continued nearly seven days; and a working model of the telephone transmitter and receiver obtained from the American Telephone & Telegraph Co.

One of the most notable additions for the entire year was the Martha Washington dress placed in the Museum as a permanent loan by Mrs. Morris Whitridge in memory of her sister, Miss Sally Pinkerton MacKenzie. This is exhibited in the costume collections in the series of dresses of the mistresses of the White House.

During the year there were received 1,314 lots of material for examination and report, the larger part of geological and botanical nature, the aggregate number of specimens included being considerable. Some of this material, after being identified, was returned by request to the senders, while a part was retained as an addition to our collections.

Gifts of specimens to schools and other educational institutions included 3,258 specimens, among which there were 8 sets of mollusks consisting of 149 specimens each, 18 sets to illustrate rock weathering and soils of 12 to 16 individual specimens each, 6 sets of fishes numbering 55 specimens, 1 set of 132 specimens, 1 set of 133 specimens and 1 set of 54 specimens. Exchange of duplicate material with other institutions and individuals amounted to 23,326 specimens, while loans of specimens to workers outside of Washington included 33,723 separate objects. The handling of all this material is a matter of considerable labor on the part of the staff because of the care required in selection, in packing for shipment, and in the case of loan material in unpacking and checking over for return to the collections.

The following statement of specimens now covered by the Museum catalogues will be of interest:

Anthropology	677,004
Biology	8,848,367
Geology	2,015,420
Arts and industries	98,097
History	390,581
Total	12,029.469

REORGANIZATION OF THE MILITARY EXHIBITS

The military exhibits concerned with the World War, assembled after the close of that conflict, through necessity of available space were installed originally in widely separated halls—in part in the Natural History Building and in part in the Arts and Industries Building on the opposite side of the Smithsonian Park. These exhibits, whose assembling was possible only through the interested

cooperation of the War Department, for years have been an attractive subject to large numbers of our visitors. For some time past ways and means for a better coordinated installation of this material have been under consideration, these coming finally to a head with renewed interest expressed in these exhibits on the part of the War Department, which in 1928 appointed Maj. Louis A. O'Donnell, United States Army, to cooperate with the Museum authorities in the preparation of plans for their better display. On September 28, 1928, the War Department further announced an advisory committee, to assist Major O'Donnell by consultation and cooperation, as follows: Lieut. Col. Harry B. Jordan, General Staff Corps; Lieut. Col. Paul D. Bunker, Coast Artillery Corps; Maj. John W. Lang, Infantry; Maj. Marion O. French, General Staff Corps, and Capt. Edwin M. Scott, Quartermaster Corps. Through plans devised by Major O'Donnell and approved by the Assistant Secretary certain material was returned to the War Department as no longer needed for exhibition, an artillery park was arranged in the open on ground belonging to the Smithsonian Institution, the military collections were concentrated in one connected series in the Arts and Industries Building with the majority of the other historical collections, and definite arrangements were made for building up all the military collections along agreed lines.

In connection with the assembling of these military exhibits in the Arts and Industries Building there was required reorganization of part of the display in the Divisions of Mineral and Mechanical Technology and the transfer to the Natural History Building of the lace collections. All this has been accomplished and installation made of a considerable part of the military material. Work on the rest is progressing and will be continued along the plans definitely outlined. A part of the contemplated display will necessitate assistance in the way of additional funds, which it is hoped may be provided without too great delay.

The actual process of transferring the military collections from one building to the other began about April 1, 1929, and was a task of considerable magnitude, as it necessitated the transfer of materials covering approximately 22,000 square feet of floor space. The greater part of the work was accomplished by the staff of the Division of History with the Museum labor force, with the War Department cooperating measurably by the detail of five enlisted men and a truck to aid in the transfer.

This brief review of what has been accomplished will serve as partial acknowledgement of the great assistance rendered by Major O'Donnell during his connection with the Museum. On June 15 Major O'Donnell was transferred to other duties and was succeeded by Lieut. Col. Arthur Hixson, United States Army, as representative of the War Department.

EXPLORATION AND FIELD WORK

Various researches in the field have been carried on under the different departments of the Museum, principally through funds provided by the Smithsonian Institution through its private income, or through the contributions of friends interested in certain projects. Limited assistance in a few instances has been given from the annual appropriation which has advanced the work but which has comprised only a small part of the total amounts utilized, by far the greater part of which has been secured from other resources. Additional money for such investigations is an urgent need that should be given attention. Comparatively small sums are sufficient for any one of most of our projects, so that much good may be accomplished with slight outlay. A brief account of field activities of the present year follows:

During the spring of 1929 Dr. Walter Hough carried on archeological studies in west central Texas with a view to extending the known Pueblo or pre-Pueblo culture areas. In the same region he uncovered evidence relative to aboriginal man's early history. From January to May, 1929, through the interest of Dr. W. L. Abbott, Herbert W. Krieger continued archeological investigations in the northern part of the Dominican Republic. The immediate culture problem that occupied his attention was to determine whether the area anciently occupied by the Ciguayan Indians of Samaná extended as far west as the valley of the Rio Yaque del Norte. A second problem was the attempt to extend the area known to have been anciently occupied by the pre-Ciguayan cave dwellers of the northern Dominican Republic. Results appear to indicate that the pre-Ciguayans had occupied the entire island, but that the Ciguayan Indians never reached as far west as the Yaque River. The work included further reconnaissance along the north shore of the Samaná Peninsula, and the collection of biological material from former Indian village sites for the department of biology.

Henry B. Collins, jr., was in the field from July to October, 1928, engaged in investigations of the ancient Bering Sea culture on the islands of Punuk and St. Lawrence, the project having to do with tracing early chapters in the history of western Eskimo culture. Material collected shows that there are three stages through which the art of St. Lawrence Island may be traced. An earlier, found only on the northern and western parts of the island on deeply patinated objects, consists of graceful delineated straight and curved lines; an intermediate stage is simpler in design; while the third, the well known modern and simplified art, is found at all recent sites. At Cape Prince of Wales nothing of any real antiquity was found. Results generally suggest a direct Asiatic source rather than

a local cultural development for the well-known Eskimo arts. In May, 1929, Mr. Collins again left for the field in the Bering Sea region to continue through the summer.

Neil M. Judd was in Arizona during the summer of 1929 engaged in preparation of reports covering the 1920–1927 Pueblo Bonito explorations of the National Geographic Society, and supervising the society's 1929 beam expedition. This latter has for its object the collection of timbers from pre-Spanish Pueblo villages that will aid in completing a tree-ring chronology by means of which it is believed that absolute dates may be determined for many of our southwestern ruins.

At the end of May, 1928, Dr. Paul Bartsch, curator of mollusks, traveling under the Walter Rathbone Bacon Scholarship, began the faunal study of certain groups of land and freshwater mollusks of the West Indies, the work for that season being prosecuted in Cuba where he was assisted materially by Dr. Carlos de la Torre, president emeritus of the University of Habana. During four months Doctor Bartsch covered thoroughly all of the provinces of Cuba except that of Oriente, collecting over 250,000 specimens of mollusks, including large numbers of new races and species from places hitherto unexplored. The rainy season was chosen for this field work in spite of its discomforts for it is at this time that land mollusks are most active. The collections obtained will yield much information bearing on problems of distribution both present and past, and will throw light on the derivation of the molluscan fauna of the Antiles. Incidentally, Doctor Bartsch secured for the Museum important collections of birds, insects, batrachians, mammals, and crustacea.

Through the interest of Dr. W. L. Abbott, A. J. Poole, aide in the division of mammals, and W. M. Perrygo, of the taxidermist force, traveled in Haiti for a period of about 4 months, working the caves of Haiti proper and those of the island of Gonave for extinct animal bones. In addition to cavern exploration an important part of the work was the collection of birds to supplement distributional data already available, and there were obtained also mammals, mostly bats, as well as fishes, reptiles, marine invertebrates, mollusks, insects, and miscellaneous ethnological and anthropological materials.

One of the important expeditions undertaken during the year by friends of the Museum was that of the auxiliary yacht *Mary Pinchot* to the South Seas under the leadership of the Hon. Gifford Pinchot. The vessel left New York City in April for a cruise of about 10 months, with Dr. A. K. Fisher of the Biological Survey as naturalist to obtain material desired for the National Museum. In the collections made in the first few weeks there have been received a

skull of the little-known long-beaked porpoise *Prodelphinus plagiodon*, and 10 forms of birds new to the Museum collections. Further shipments of important material are expected as the cruise continues.

Dr. Joseph F. Rock, traveling under the auspices of the National Geographic Society, visited the kingdom of Muli, or Mili, in southwestern Szechuan, as well as adjacent parts of the Province of Yunnan, exploring also to the northwest of Muli in the hitherto unvisited snow range of Konka Risonquemba, rising to a height of 25,000 feet, and mountains to the east and northeast. From this work there have been obtained important collections of birds and plants, the specimens coming to the National Museum through the gift of the National Geographic Society.

Dr. Hugh M. Smith, in the course of fisheries investigations in Siam, visited the northern part of that country in November and December of 1928, and made hurried collections on Doi Angka and Doi Sutep, two previously unexplored peaks of the Kuhn Tan Mountains. Material secured has been of particular interest and has resulted in the discovery of new and rare species, among them seven new forms of birds.

Dr. David C. Graham continued work in the vicinity of Suifu, in the Province of Szechuan, China, and in July, 1928, set out on a journey to Ningyuenfu, by way of Yachow, spending about two months on the trip. Though bandits threatened at most of the interesting points, many valuable specimens were obtained.

During brief field investigations into the hosts of certain parasites in Virginia and North Carolina, Dr. H. E. Ewing, of the Bureau of Entomology, was accompanied by C. S. East, of the preparators' staff, who collected a small series of birds for skeletons.

Dr. J. M. Aldrich, of the division of insects, in May, 1929, began work in the British Museum on type specimens of diptera with the plan, as part of the trip, to do some collecting of northern insects, principally diptera, in Norway and Sweden.

Dr. Waldo L. Schmitt and C. R. Shoemaker, in the course of an examination of the crustacean fauna of the region about the United States Bureau of Fisheries station at Beaufort, N. C., secured more than 1,300 specimens of marine invertebrates. J. O. Maloney, by invitation of Mr. Copley Amory, was detailed for part of the summer of 1928 to proceed to Canada in continuation of the biological survey of Mr. Amory's estate on the north shore of the Gulf of St. Lawrence near the Matamek River. Doctor Bartsch visited the Marine Biological Laboratory at the Tortugas, Fla., from August 17 to August 30, 1928, in connection with work on the cross-breeding of cerions, an investigation carried on in cooperation with the

Carnegie Institution of Washington. While at the Tortugas, Doctor Bartsch spent a day under water with the diving hood and the undersea camera, going over fields photographed formerly, in order to have a continuous record of life on the reefs.

From December, 1928, to the latter part of May, 1929, E. C. Leonard was engaged in botanical field work in northwestern Haiti, through the generous support of Dr. W. L. Abbott. Large collections (nearly 15,000 specimens) were obtained, which will be of very material assistance in making known the flora of Hispaniola, a project upon which Mr. Leonard has been engaged for several years. During the last three months of the fiscal year Mr. Killip, accompanied by A. C. Smith and W. J. Dennis, honorary collaborators, has prosecuted botanical explorations in eastern Peru and adjacent regions. Reports from the field indicate that a large amount of herbarium material is being obtained that will be exceedingly valuable in current studies of the flora of western South America.

In July and August, 1928, Dr. A. S. Hitchcock, custodian of grasses, visited Newfoundland and Labrador for the purpose of studying and collecting grasses. A large illustrative series of specimens and much useful information regarding the range of species in these little-explored regions were obtained. Jason R. Swallen, assistant in the grass herbarium, spent the summer of 1928 in field work in the southwestern United States. Many of the rarer grasses were collected as well as other material relating to current studies.

Dr. George P. Merrill, head curator of the department of geology, was detailed in September, 1928, to visit various mineral localities in the New England States. He first worked at the pegmatite deposits at Newry, Me., where the fine block of material mentioned elsewhere in this report was obtained. The historically interesting gem locality at Paris Hill was next given attention; then various localities in New Hampshire, all of exceptional interest. Following this, the feldspar prospects at Bellows Falls, Vt., were examined. The acquisition of the feldspar vein at Newry, Me., was considered to have more than compensated for the trip.

The explorations of Dr. W. F. Foshag begun early in the year being still under way, little can be said except that he reports the collecting of much that is interesting, particularly in the form of borate minerals from various localities in southern California and Nevada. While a part of this material has reached the Museum, the recording will go over until the entire collection is received.

James Benn and B. O. Reberholt were on several occasions detailed to collect geological specimens in adjacent localities in Maryland and Virginia where desirable materials could be obtained.

Stratigraphic studies of the Cambrian as developed in the larger mountain ranges of Wyoming were the main object of an expedition in 1928 by Associate Curator C. E. Resser. Nearly three months were spent in this investigation, in the course of which several mountain ranges were explored. Collections of fossils were limited, the rocks in many cases being of such shallow water origin as to have destroyed them. Much valuable information relating to stratigraphy was secured, which was the major object of the season's work.

Since the field exploration undertaken by Curator C. W. Gilmore and his party in the Two Medicine formation in Montana extended well into the present year, but brief mention was made of it in last year's report. The expedition, which covered the time from May 12 to July 15, 1928, covered the Bad Land areas along the Milk and Two Medicine Rivers, on the Blackfeet Indian Reservation. Considerable success attended the work, the collections being sufficient in scope to be fairly representative of the fauna of the formation. The material as a whole is a most important addition to our series where practically all of the forms found were previously unrepresented. Scientifically it will be of interest not only for the new species contained, but for its decided contribution to the meagerly known fauna of the formation, placing this on a basis that will permit of its comprehensive comparison with other Upper Cretaceous formations of contiguous areas.

Upon completion of the above work, Mr. Gilmore visited the Bear Creek Coal Field in southern Montana for the purpose of securing some of the Paleocene mammal remains occurring in the Eagle Mine at that place. Lack of time prevented search being made for these minute fossils on the ground, but 400 pounds of the fossil-bearing matrix were boxed and shipped to the Museum.

In the early spring of 1929, work was again taken up at Melbourne, Fla., by Dr. J. W. Gidley, in continuation of the project relative to the presence of early man in Florida. About six weeks were spent in this work, for which generous financial assistance was furnished by Childs Frick. Again important evidence was gathered indicating the presence of man in Florida contemporaneous with an extinct fauna of the Pleistocene. While the mammal remains obtained will be useful in determining the exact phase of the Pleistocene represented, a still unsettled part of the general problem is under investigation. In this connection it may be mentioned that assistance is being rendered by Dr. Thomas Barbour, of the Museum of Comparative Zoölogy, in continuing collecting activities in this area. The material thus obtained is being placed at the disposal of Doctor Gidley for study.

Almost at the end of the fiscal year, Doctar Gidley was detailed to visit fossil-bearing beds discovered by a United States Geological Survey party at points in Idaho. Since operations will hardly have begun within the time of this report, statement regarding them will go over until next year.

In cooperation with the Peabody Museum of Yale University, N. H. Boss was detailed late in March, 1929, to engage in further exploration of a cave in New Mexico where a giant ground sloth was found last year, as well as to search other similar caves in the region. Following these operations, Mr. Boss joined Mr. Gilmore in an expedition to the San Juan Basin, N. Mex., to collect dinosaur and other vertebrate remains. As this work is expected to continue into the next fiscal year, no detailed report on either expedition will be given at this time.

Remington Kellogg and Norman H. Boss continued explorations of the Miocene along Chesapeake Bay from time to time. At little expense to the Museum, various fossil cetacean remains were added to the collection.

EDUCATIONAL WORK

Fundamentally all of our Museum work is educational, as it is planned for the increase and diffusion of knowledge among men. The National Museum is in no sense a local institution, as its appeal is to residents of every part of this country, and citizens from all sections of the land enjoy and profit by its exhibition halls. Libraries all over the world receive its publications without charge, and institutions of higher education in all parts of the United States share in its duplicate specimens. Unlike many large museums elsewhere, the National Museum has no special provisions for direct teaching of children or adults, as it has no funds for docents, guides, or lecturers. Its collections, however, are so systematically arranged and clearly labeled that the average visitor needs but little guidance, and where necessary the members of the scientific and technical staffs are always ready to answer questions and to explain exhibits, so far as other duties permit.

In the department of anthropology during the present fiscal year several informal talks were given on the exhibit floor of the Museum before classes of normal and high school students, and parties of church and club members were personally conducted when viewing the exhibits. Doctor Hough talked to several groups of Boy Scouts

and demonstrated to them methods of fire making. He also demonstrated methods of fire making for the Fox Movietone News. Neil M. Judd, curator of archeology, made an address on the architecture of Pueblo Bonito before the Twenty-third International Congress of Americanists in New York early in September. While assistant in the division of Old World archeology, J. T. Russell spoke before the Art and Archaeology League of Washington on his work in the prehistoric sites of France.

Dr. A. Hrdlička, curator of physical anthropology, during the year gave a series of lectures on various aspects of his research work. Calls in this respect, particularly from local associations, have increased until all can not be accepted. The main lectures were as follows: November 5, 1928, New York Academy of Sciences, section of geology and mineralogy, "The Where, When, and Why of Human Evolution"; December 3, 1928, Cambridge, Mass., "The Slavs"; February 4, 1928, Twentieth Century Club, Springfield, Mass., "Man's Past, Present, and Future"; February 10, 1929, radio talk, Collier's, "The Ethics of Human Evolution"; February 11, 18, and 25, 1929, lectures at St. John's College, Annapolis, Md., on "Man"; March 5, 1929, Takoma Park Women's Club, Washington, D. C., "Future of Man"; April 9, 1929, Jewish Community Center, Washington, D. C., "Man"; April 10, 1929, Conference on Immigration Policy, New York City, "The Biological Aspects of Immigration"; April 19, 1929, The American Philosophical Society, Philadelphia, Pa., "Man's Future in the Light of His Past and Present." In addition, scientific papers were presented before the National Academy of Sciences, Section H of the American Association for the Advancement of Science, and the International Congress of Americanists. Also several groups of students from local institutions and the University of Maryland were given talks in the Museum.

The value of the material of the department of anthropology to art students was evidenced by the number of pupils making use of the collections. The head curator and his assistants made it a point on request to conduct classes wishing to learn of portions of the collection through a more personal contact than by descriptive labels. Numerous requests for advice and aid in the Museum correspondence were made the opportunity to disseminate much of educational value. Correct information to writers for the press was the means of forwarding knowledge of the resources of the Museum.

Daily visitors coming to the Museum bringing specimens for identification and other information were served. The annual gathering of the 4–H Clubs included in their program the inspection of the Museum and expressed much satisfaction at the result of their tutelage.

In the department of biology Dr. J. M. Aldrich, associate curator of insects, gave a lecture to members of the Harvard University medical class on the subject of insects affecting man. Dr. Waldo L. Schmitt, curator of marine invertebrates, has given several illustrated talks on his South American experiences as the Walter Rathbone Bacon scholar of the Smithsonian Institution—three, before classes of the Washington public schools and one before the Takoma Park Horticultural Club. Mr. C. R. Shoemaker, assistant curator in the same division, rendered valuable assistance to the Audubon Society in connection with their bird-study classes and field trips. Dr. Paul Bartsch, curator of mollusks, as usual, has conducted classes of students from George Washington University and Howard University through the Museum for study of the exhibits. He gave the following popular lectures before various organizations on "The Museum and Its Relation to Scouting," before about 40 Boy Scout executives; on "The Intermediate Molluskan Hosts and Schistosomiasis in Man," before the Naval Medical School; on "Field Experiences with Cuban Insects," before the Entomological Society of Washington; on "Marine Explorations," before the Naturalists' Field Club at the University of Pennsylvania; and before the Chi Delta Mu Fraternity at Philadelphia, on "Undersea Photography," before the Boy Scouts of the District of Columbia; on "The Sea," at a meeting of the Newcomers Club at the Carlton Hotel; and on "The Wonders of the Deep," at a meeting of the District chapter of the Alumni Association of the State University of Iowa. He also addressed the German Club at George Washington University, Der Schoenfeldt Verein, on "Das Meer und seine Bewohner." In addition he continued to serve as vice president of the district council of the Boy Scouts of America and as chairman of its court of honor. W. B. Marshall, assistant curator of mollusks, has continued to serve as deputy commissioner at large in the same organization. Austin H. Clark, curator of echinoderms, served as news manager for the American Association for the Advancement of Science at the New York meeting and subsequently as director of the press service of the association. This service has been extensively utilized by press associations and by individual newspapers, and through it many contacts have been

made which have resulted in increasing the amount and accuracy of scientific information in the current press.

In the department of geology Doctor Bassler reports that educational activities are increasing each year and requiring more and more of his time. The value of the collections from an educational standpoint is becoming so widely known to students throughout the country that we have many visitors requiring personal attention, whether or not they have definite problems in view. The local geology about Washington also is so instructive in its completeness of geological phenomena that various universities include this city in their summer-school trips. The result is that much time, especially during the month of June, is taken up in conducting such parties through the Museum and on field tours around Washington. Doctor Bassler has also given talks on geological subjects before Boy Scouts and similar organizations and has continued to serve as examiner for the Girl Scouts. Mr. Gilmore reports conducting more than 250 students through the laboratory and exhibition halls of his division. Doctor Gidley, while in Florida, talked to the St. Petersburg High School and to the Kiwanis Club of Melbourne on the ancient mammalian life of that State. He also gave a radio talk on "Ancient Wild Horses" over stations WRNY and W2XAL while in New York City attending the annual meeting of the Geological Society of America.

In the department of arts and industries the professional staff in mineral and mechanical technology repeated the series of talks given in former years to classes from local schools on the coal industry and on land, water, and air transportation, using the collections for illustrations. To satisfy a persistent request on the part of local teachers and others, a series of lantern slides illustrating the history of aeronautics and the building of model airplanes was prepared. Several of the local public and private schools made use of the slides during the year, and, in addition, they were loaned to Gen. Mason M. Patrick, retired chief of the Air Service, United States Army, for a lecture on the history of aeronautics which he gave at Yale University. The slides were also used at the Naval Academy, Annapolis, Md., in the summer-school course in aviation given to second-year midshipmen. The assistant curator made use of them in five lectures given during the year to local schools and civic organizations.

The exhibits in the textile halls continued to be popular with classes from the public schools of Washington, and many requests were made at the office of the curator of textiles for explanations of the technical processes used in the manufacture and ornamentation

of cloth. The freshman class of the Wilson Normal School visited the Museum, coming in sections for a short talk by Mr. Lewton on the application of textile designs. The curator gave a talk on the same subject to a class in costume design from the Central High School, and to a class in commercial geography from the Business High School he explained the processes of cloth construction. Sales people from the training department of Woodward & Lothrop's department store were instructed in textile processes. At a meeting of the textile section of the Home Economics Association, held in the Bureau of Home Economics, he gave a lecture on the Progress of Rayon. A talk on fabric ornamentation was given to the major drawing class of Central High School by Mrs. E. W. Rosson, aid in the division of textiles, who also on two occasions assisted classes from the home economics department of George Washington University in demonstrations of flax and by-products of the cotton plant.

Dr. Augustus C. Taylor, professor in the College of Pharmacy of George Washington University, utilized the history of medicine collection, bringing his classes to the Museum for the purpose of illustrating his lectures with actual specimens. Doctor Whitebread, assistant curator of medicine, gave several informal talks on the subject to members of the classes of this college who called at different times throughout the year. Professor Jenson, of Washington Missionary College, Takoma Park, Md., supplemented her lectures on various phases of hygiene and sanitation by visits to the division with her classes. The collections were explained to the students by the assistant curator, as well as to other groups from the same college. Miss Hickler, of Johns Hopkins Hospital, Baltimore, Md., utilized the hygiene and sanitation collections, and brought over large groups of student nurses on various occasions and directed their study.

Many classes in medicine and pharmacy made use of the history of medicine, pharmacy, and materia medica collections during the entire year. Dr. George B. Roth, jr., professor of pharmacology at George Washington University, found the collections of value on several occasions, and procured illustrations with which to supplement his lectures. Dr. C. N. MacFall, professor at the University of Virginia Medical College, Charlottesville, Va., made use of the collection of photographs of famous physicians, and also obtained data relating to optics and refraction for use in his work. Mrs. Helen J. Campbell, teacher at the Punahou School, Honolulu, Hawaii, spent several days studying the hygiene and sanitation col-

lections, and obtaining data from the sectional library, for use in her work of teaching.

As a feature of its Philadelphia meeting, held May 22 to 24, 1929, the American Association of Museums requested that the museums represented in its membership join in an exhibit of museum labels. At the request of the Assistant Secretary, the curator of textiles collected examples of different types of labels from the several departments of the Museum and from the National Gallery of Art, and arranged an exhibit in the vestibule of the auditorium where the convention was held. The exhibit compared favorably with those from other institutions.

The division of graphic arts and the section of photography continued its special loan exhibitions, and in its exhibition series gave residents of Washington, as well as visitors, opportunity to keep in touch with the artistic productions of the day in these fields. This division also has a number of traveling exhibits that illustrate the making of prints by the different processes which are in common use. The exhibits are lent to libraries and higher educational institutions throughout the country, the only expense being for transportation. During this fiscal year they were shown in 49 different places in all sections of the land. One exhibit shown in various public libraries in California for two seasons has now been returned, and, after renovating, it or another will be forwarded for use during the coming season.

During the National 4–H Club Camp, composed of prize-winning farm boys and girls from 40 States, which was held in the grounds of the Department of Agriculture June 19 to 26, 1929, a delegation of about 200 visited the National Museum, which was divided into four groups, each provided with a special guide, and shown over the Arts and Industries and the Aircraft Buildings. Talks on the exhibits of particular interest to these young people were given by the staff so that they might return to their homes familiar with the principal treasures belonging to them which are cared for in the National Museum.

VISITORS

The Museum buildings are open to the public, free of charge, every week day from 9 a. m. to 4.30 p. m. and, in addition, the Natural History Building, the Arts and Industries Building, and the Smithsonian Building are open on Sunday afternoon from 1.30 to 4.30. This year all exhibition halls were closed on the day before Christmas, Christmas Day, New Year's Day, and Inauguration Day (March 4, 1929). On Saturday, March 2, by special request of the committee

in charge of the inaugural arrangements, the buildings were kept open until 5 o'clock in the afternoon.

The flags on the buildings were flown at half mast out of respect to the late Marshall Foch on the day of his funeral, March 26, 1929, and on Memorial Day, May 30, 1929, from 8.30 a. m. until noon.

The visitors to the Museum for the year aggregated 1,929,625 persons, an increase of more than 516,000 over the previous year. Average attendance for week days was 5,175 and for Sundays 6,330. The number of visitors to the Smithsonian Building on week days was 226,324 and 50,971 on Sundays, a daily week-day average of 735 and a Sunday average of 962; to the Arts and Industries Buildings 711,687 on week days and 157,265 on Sundays, a daily week-day average of 2,311 and a Sunday average of 2,967; to the Natural History Buildings 523,546 on week days and 127,269 on Sundays, a daily week-day average of 1,700 and a Sunday average of 2,401; and the number of visitors to the Aircraft Building for the year was 132,563, a daily average of 431.

The following tables show, respectively, the attendance of visitors during each month of the last year and for each year since 1881, when the building now devoted to arts and industries was first opened to the public:

Number of visitors during the year ended June 30, 1929

Year and month	Smithsonian building	Museum buildings			Total
		Arts and Industries	Natural History	Aircraft	
1928					
July	35, 465	110, 215	69, 867	15, 342	230, 889
August	47, 841	137, 432	99, 238	20, 057	304, 568
September	31, 856	95, 035	102, 084	13, 778	242, 753
October	20, 362	66, 359	46, 188	8, 241	141, 150
November	11, 985	46, 278	30, 918	5, 147	94, 328
December	10, 067	29, 220	23, 743	4, 995	68, 025
1929					
January	7, 034	22, 216	20, 459	3, 345	53, 054
February	8, 904	30, 139	23, 518	3, 967	66, 528
March	23, 606	70, 206	54, 241	15, 140	163, 193
April	31, 020	95, 791	69, 180	15, 027	211, 018
May	19, 588	76, 856	51, 084	11, 860	159, 388
June	29, 567	89, 205	60, 295	15, 664	194, 731
Total	277, 295	868, 952	650, 815	132, 563	1, 929, 625

Number of visitors to the Smithsonian and Museum Buildings since 1881

Year	Smithsonian Building	Museum buildings			Total
		Arts and Industries	Natural History	Aircraft	
1881	100, 000	150, 000			250, 000
1882	152, 744	167, 455			320, 199
1883	104, 823	202, 188			307, 011
1884 (half year)	45, 565	97, 661			143, 226
1884–85 (fiscal year)	105, 993	205, 026			311, 019
1885–86	88, 960	174, 225			263, 185
1886–87	98, 552	216, 562			315, 114
1887–88	102, 863	249, 665			352, 528
1888–89	149, 618	374, 843			524, 461
1889–90	120, 894	274, 324			395, 218
1890–91	111, 669	286, 426			398, 095
1891–92	114, 817	269, 825			384, 642
1892–93	174, 188	319, 930			494, 118
1893–94	103, 910	195, 748			299, 658
1894–95	105, 658	201, 744			307, 402
1895–96	103, 650	180, 505			284, 155
1896–97	115, 709	229, 606			345, 315
1897–98	99, 273	177, 254			276, 527
1898–99	116, 912	192, 471			309, 383
1899–1900	133, 147	225, 440			358, 587
1900–1901	151, 563	216, 556			368, 119
1901–2	144, 107	173, 888			317, 995
1902–3	181, 174	315, 307			496, 481
1903–4	143, 988	220, 778			364, 766
1904–5	149, 380	235, 921			385, 301
1905–6	149, 661	210, 886			360, 547
1906–7	153, 591	210, 017			363, 608
1907–8	237, 182	299, 659			536, 841
1908–9	198, 054	245, 187			443, 241
1909–10	179, 163	228, 804	50, 403		458, 370
1910–11	167, 085	207, 010	151, 112		525, 207
1911–12	143, 134	172, 182	281, 887		597, 203
1912–13	142, 420	173, 858	319, 806		636, 084
1913–14	102, 645	146, 533	329, 381		578, 559
1914–15	40, 324	133, 202	321, 712		495, 238
1915–16	48, 517	146, 956	381, 228		576, 701
1916–17	86, 335	161, 700	407, 025		655, 060
1917–18	67, 224	161, 298	401, 100		629, 622
1918–19	101, 504	266, 532	[1] 132, 859		500, 895
1919–20	86, 013	250, 982	422, 984		759, 979
1920–21	90, 235	286, 397	467, 299	31, 235	875, 166
1921–22	83, 384	262, 151	441, 604	46, 380	833, 519
1922–23	95, 168	259, 542	508, 518	42, 904	906, 132
1923–24	104, 601	290, 012	540, 776	43, 534	978, 923
1924–25	107, 342	304, 858	557, 016	52, 787	1, 022, 003
1925–26	110, 975	355, 762	581, 563	58, 005	1, 106, 305
1926–27	128, 868	380, 430	561, 286	82, 628	1, 153, 212
1927–28	175, 190	517, 238	618, 773	102, 185	1, 413, 386
1928–29	277, 295	868, 952	650, 815	132, 563	1, 929, 625
Grand total	6, 095, 067	12,093,496	8, 127, 147	592, 221	26, 907, 931

[1] Building open for only 3 months of the year.

PUBLICATIONS

The publications issued during the year include eight volumes, namely, the Annual Report for 1928; Bulletin 100, volume 8, Contributions to the Biology of the Philippine Archipelago and Adjacent Regions—The Fishes of the Series Capriformes, Ephippiformes, and Squamipennes, collected by the United States Bureau of Fisheries steamer *Albatross*, chiefly in Philippine seas and adjacent waters, by Henry W. Fowler and Barton A. Bean; Bulletin 104, part 6, The Foraminifera of the Atlantic Ocean—Miliolidae, Ophthalmidiidae and Fischerinidae, by Joseph Augustine Cushman; Bulletin 145, A Revision of the North American Species of Buprestid Beetles Belonging to the Genus Agrilus, by W. S. Fisher; Bulletin 146, Life Histories of North American Shore Birds—Order Limicolae (pt. 2), by Arthur Cleveland Bent, and a small edition, for office use, of the complete volumes 71 and 72 of the Proceedings, and Bulletin 100, volume 1, Contributions to the Biology of the Philippine Archipelago and Adjacent Regions—Papers on Collections Gathered by the *Albatross* Philippine Expedition 1907–1910. Sixty-one separate papers published include two papers in the Contributions from the National Herbarium and 59 in the Proceedings.

The distribution of volumes and separates to libraries and individuals on the regular mailing lists aggregated 99,739 copies, while in addition 15,389 copies of publications issued during this and previous years were supplied in response to special requests. The mailing lists have been carefully revised to avoid loss in distribution so far as possible.

The editorial office, besides supervising the printing of the publications, has charge of all miscellaneous printing and binding for the Museum, in which connection 608,987 forms, labels, and other items were printed and 1,229 volumes were bound.

LIBRARY

The library of the United States National Museum is, next to the Smithsonian deposit in the Library of Congress, the most important unit in the Smithsonian library system. It consists chiefly of two main divisions, namely, the natural history collection, housed largely in the Natural History Building, and the technological collection, shelved in the Arts and Industries Building. Closely affiliated with these two larger collections are the 36 sectional libraries of the Museum, which are the immediate working tools of the curators. These 38 collections, so far as they have been catalogued, now number 74,562 volumes and 107,629 pamphlets. They were increased during the

past year by 2,247 volumes and 748 pamphlets, which came mainly by exchange and purchase.

Prominent among the gifts for the year were the following: 1,000 volumes, pamphlets, and manuscripts of a miscellaneous character from Herbert A. Gill of Washington, D. C., brother of the late Dr. Theodore Gill, at one time librarian and associate in zoology in the Smithsonian Institution; 500 books and periodicals on photography, both American and British, some of them quite old and rare, from A. B. Stebbins of Canisteo, N. Y.; the first 4 volumes of the Smithsonian Scientific Series, Patrons' Edition, from the Smithsonian Institution; 30 publications needed by the Museum sets, from the American Association for the Advancement of Science; a number of volumes and parts from the Library of Congress; and various publications from the Hygienic Laboratory for use in the division of medicine. Among donors on the staff of the Institution and its branches, three should be especially mentioned—Dr. William H. Holmes, director of the National Gallery of Art, who, as in other years, was a generous contributor of publications of different kinds; Dr. Charles W. Richmond, who gave many volumes, some very rare, chiefly on ornithology; and Miss Mary J. Rathbun, whose gifts during the year increased her total gifts to the library to considerably more than 200 pieces, not including her own publications. Other gifts were received from Secretary Abbot, Assistant Secretary Wetmore, W. de C. Ravenel, Dr. R. S. Bassler, Dr. F. W. Clarke, Dr. J. W. Gidley, A. J. Olmsted, J. H. Riley, Miss Louise A. Rosenbusch, and Dr. Waldo L. Schmitt.

The library staff kept up current work, as usual, with the result that they entered 9,759 periodicals, catalogued 1,422 volumes and pamphlets, added more than 4,000 cards to the catalogue, and had 1,331 volumes bound. They sent 5,518 publications to the sectional libraries, and loaned to the scientific staff 4,793, of which 2,163 were borrowed from the Library of Congress and 271 elsewhere. They returned 2,336 books to the Library of Congress and 299 to other libraries. They also lent about 200 books to various Government libraries and to libraries outside of Washington, including those of the American Museum of Natural History, Carnegie Museum, Field Museum, Department of Agriculture of Canada, E. I. du Pont de Nemours & Co. experimental station, and the following colleges and universities: Buffalo, California, Goucher, Minnesota, and Princeton. One loan to the Field Museum consisted of a duplicate set, in 43 volumes, of Linnaea, Berlin, 1825–1882, and was made on semipermanent charge, this being the third loan of this kind in recent years, the other two having been made to Johns Hopkins

University and the University of Chicago. All three were for the furthering of specialized scientific research, in keeping with the general policy of the Museum, as a branch of the Smithsonian Institution, of increasing and diffusing knowledge.

About as many publications as usual were consulted in the library, but there was a marked growth in the reference and informational service rendered by the staff, not only to the scientists of the Museum and to investigators from the different departments of the Government, but to scholars and to inquirers generally throughout the country. In this connection special attention should be called to the growing importance, both to the employees of the Smithsonian Institution and its branches and to the visiting public, of the recently reorganized reading and reference room, with its loan and information desk, in the Arts and Industries Building. In the course of the year the assistant in charge, besides performing her other duties, recorded 700 visitors, answered more than 200 inquiries for information, some involving considerable research, and loaned nearly 3,000 books and periodicals.

Because of the demands of the current work of the library and the smallness of the staff only a little was done during the year toward revising and completing the main shelf list and catalogue or checking and reorganizing the collections—in a word, toward continuing the solution of some of the more serious problems inherited from the past. Time was found, however, for a few special tasks, such as assembling, from several unorganized collections in various parts of the library, about 1,800 publications of the State geological surveys for use in completing sets in the main library, the division of geology, the Library of Congress, and the Geological Survey; preparing nearly 10,000 publications of State agricultural experiment stations, not needed by the Museum, to be sent to the library of the Department of Agriculture for its own use or for distribution to experiment stations throughout the country; grouping by subject 667 reprints and sending them to the curators concerned; filing the Wistar Institute cards to date; selecting the Concilium Bibliographicum cards pertaining to mammals and depositing them in the section of mammals; and sorting some of the old material in the main library.

For the same reasons only a little time was available for much needed special work in the sectional libraries. These libraries number 36 and are as follows:

Administration.
Administrative assistant's office.
American acheology.
Anthropology.
Biology.
Birds.
Botany.
Echinoderms.
Editor's office.
Ethnology.

Fishes.
Foods.
Geology.
Graphic arts.
History.
Insects.
Invertebrate paleontology.
Mammals.
Marine invertebrates.
Mechanical technology.
Medicine.
Minerals.
Mineral technology.
Mollusks.
Old World archeology.
Organic chemistry.
Paleobotany.
Photography.
Physical anthropology.
Property clerk's office.
Reptiles and batrachians.
Superintendent's office.
Taxidermy.
Textiles.
Vertebrate paleontology.
Wood technology.

The physical condition and appearance of the library in the Natural History Building were greatly improved during the year. The walls, ceilings, and floors of the three rooms were painted, new lights, and ventilators were installed, a cork runner was laid the full length of the reference and stack rooms, and the two large, awkward reading tables were converted into four attractive, small ones.

On the whole, the library made substantial progress toward the goal of better organization and greater efficiency that it had set for itself five years before, and toward which it has since been steadily moving, but its progress was seriously hampered by the smallness of its staff. It is, therefore, earnestly hoped that the need of the library for more trained assistants, which is now its most pressing need, can soon be met, that its staff may be able not merely to carry on the current work, but also to proceed as rapidly as possible to complete the Museum's collections and make them more readily available by the application of modern library methods.

PHOTOGRAPHIC LABORATORY

The photographic laboratory of the Museum, with only three employees, reports as the work of the year the making of 2,135 negatives, 13,014 prints, 245 lantern slides, 63 enlargements, the mounting of 59 prints, and the development of 37 plates, 160 rolls of film, and 39 film packs. These were required for illustrations in publications or for record in the National Museum, the National Gallery of Art, and the Bureau of American Ethnology. The Museum laboratory, through a cooperative arrangement serves other bureaus of the Smithsonian Institution in their photographic work. There is steady annual increase in the work performed by this important unit in our organization.

BUILDINGS AND EQUIPMENT

Building repairs and alterations.—In work accomplished in connection with the Natural History Building there may be mentioned

the renewal of a further section of old concrete roadway opposite the east wing connecting with the new section adjoining on the north. There was additional temporary repair work on two sections of roadway leading to the north entrance, and on one on the west side of the building, where asphalt topping was used to fill depressions. Other minor repairs consisted of painting all exterior woodwork of the building in the east court with two coats of lead and oil paint; enlarging the outside door of the whale room in the east court; and painting four galvanized-iron ventilators on the roof of the east court.

The need of shrubbery to relieve the barrenness of the approach to the north entrance of the Natural History Building has long been felt, so that it is pleasant to report that in the autumn of 1928, through cooperation of the office of Public Buildings and Public Parks, two beds of evergreens were planted, one on either side of the drive, greatly improving the appearance of this side of the building.

In the interior of the Natural History Building a partition was installed across the corridor on the third floor of the west range, cork carpet was laid in the halls of the library, and partitions on the east and south sides of the taxidermy shop were extended to the ceiling. The walls and ceilings in 24 rooms on the ground and third floors were repainted and some of the wooden floors were painted in order to preserve the wood.

The lunch room at the west entrance to the Arts and Industries Building was entirely remodeled, the skylight being removed and a solid roof provided. It was decided that the old wooden floor was unsafe so that this was replaced with a cement floor covered with cork carpet, and modern lighting and ventilating appliances were installed. For several years the blacksmith shop, in the basement in the southwest corner, has been not only unsatisfactory but unsafe, being directly under the pavement outside of the building. After consultation with the Supervising Architect's Office the roof was remodeled and strengthened with steel beams supported on brick piers. The wooden floor in the room north of the east entrance was removed and a new concrete floor laid at the same level as that of the main floor of the building. This room is now available for the storage of equipment formerly kept in the vestibule. The rooms on the second floor of the northwest pavilion were painted and the floors refinished. The walls and ceilings in the women's comfort rooms and the walls and floors in the division of photography were painted, as well as the walls and ceilings below the galleries in the west hall. The most important work on the exterior of the Arts and Industries Building was the repainting of all galvanized-iron cornices and pinnacles on eight range roofs and four pavilions, as

well as the statuary over the north entrance; and the metal work in the lanterns over the four main halls, the four courts, and the rotunda.

Cork carpet was laid on the third floor of Herbarium Hall in the Smithsonian Building, and all exposed portions of the main wooden floor and the floors in the lower rooms at the east end of the hall were repainted. The walls and ceilings in the secretary's offices and in two rooms of the disbursing office, as well as the walls, woodwork and ceilings of four rooms occupied by the library, also were repainted.

The old Seneca stone walk on the south side of the Smithsonian Institution was removed and a new concrete walk laid. The roof over the east end of the building was repaired, and the ventilators in two skylights over the storage room on the west range were remodeled. Twenty diamond-mesh grills were made and installed in 10 window openings on the north and south sides of the new gallery in Herbarium Hall.

The roof of the Air craft Building was given a coat of metallic paint.

The exterior of the south shed, including the roof, gutters, and rain leaders, was thoroughly repaired and painted.

Repairs to rotunda dome.—Work on safeguarding the dome above the rotunda in the Natural History Building, provided for under a special appropriation, began at noon, September 12, 1928, under contract with the Hatton Construction Co., when the first load of lumber for the scaffold of a hoisting elevator, which was erected in the west court, arrived. Operations in the rotunda attic were completed on May 9, 1929, and the last of the débris was moved from the attic on May 14. The work was performed under the efficient direction of the engineers in the office of the Supervising Architect of the Treasury Department.

Two great bands of steel were placed around the four huge piers that support the dome, one at the level of the floor of the attic, and one near the tops of the piers in the ceiling above. Between them steel beams were installed extending vertically from band to band behind the piers, with a series of screw jacks between the beams and the bodies of the piers proper. Tension was placed on these jacks in such a way as to bring even strain all around, holding the piers from any possibility of spreading at the top. The delicate operation of adjusting the screw jacks required nearly three weeks for completion and was performed with the cooperation of a corps of engineers from the Bureau of Standards. The work was of a highly specialized nature and attracted considerable attention from engineers.

Following this, arrangements were made for the cleaning of the limestone surfaces in the rotunda from the attic level down to the first floor, and in addition all plastered surfaces, including the vaulted arches above the attic floor, the ceilings and side walls in all galleries around the rotunda from the first floor to the attic, and the side walls and ceilings in the two main stairways leading from the ground floor to the attic were painted. This work was in progress at the close of the year.

A change in the drainage scheme for waste water from the roof of the dome, now being made, still remains to be completed.

The rotunda was closed to visitors on the afternoon of December 1, 1927, remaining thus at the close of the fiscal year.

Heat, light, and power plant.—The plant for furnishing heat, light, and power to the Museum group of buildings was put in operation September 30, 1928, and was closed down for the summer on May 28, 1929. During the period that the plant was closed the men concerned with its operation took the major part of their leave, while those on duty were occupied in making necessary repairs and changes to put the machinery in proper condition for the balance of the year. The winter was mild, but cool weather continued late into the spring, making it necessary to maintain heat in the buildings until May 26, 1929. The production of electric current was greater than at any previous time, but the coal consumption was less than last year.

There was no unusual expense involved in the upkeep and maintenance of the engines and generators. Many days during the winter the three large engines were running from morning until late in the afternoon, and at no time when the buildings were open was it possible to produce sufficient electric current without the operation of two engines. There is no doubt that the length of time this plant can produce sufficient electric current for the demands of the Museum and other buildings is very limited, and that steps must be taken in the near future looking either to the elimination of the plant and the purchase of all electric current or the purchase of sufficient current to make up the difference between the demand and the quantity the plant is capable of producing.

Following the usual custom, the Steamboat Inspection Service of the United States Government was requested to examine the boilers. This was done during the latter part of 1928 and all of the boilers were found to be in a fair condition, although a request was made by the inspector that the base of the headers be exposed by the removal of the brick furnace lining, in order that these points could also be examined. This request was complied with and a

special inspection made during the latter part of June. The two bottom rows of tubes on the four boilers were renewed and the bottom of the headers repaired by electric welding.

The amount of coal used during the year in the operation of the plant was 3,340 tons, as well as 21 tons of stove coal used in the summer in the hot-water heater in the Natural History Building. The average cost of the coal by the ton for the year was $5.36.

The electric current produced during the year totaled 648,863 kilowatt-hours, manufactured at a cost of 1.89 cents for each kilowatt-hour if interest and depreciation of plant are included and 1.63 cents if interest and depreciation are excluded. The amount of electric-current production represents approximately an increase of 45,000 kilowatt-hours over any previous year.

The ice plant was in operation 3,940 hours during the year and produced 409 tons of ice at an average cost of $1.80 a ton. This is considerably less than for the past year, due to the fact that there was very little need for repairs.

Furniture and fixtures.—The furniture added during the year included 30 exhibition cases and bases; 179 pieces of storage, laboratory, office and other furniture; and 1,476 drawers of various kinds. Thirty exhibition cases and bases and 10 pieces of storage cases, laboratory, office and other pieces were condemned and disposed of. An inventory of furniture on hand June 30, 1929, shows 3,737 exhibition cases and bases; 12,747 pieces of storage, office, laboratory, and other furniture; 52,478 wooden unit drawers; 19,737 special drawers; 16,144 standard insect drawers; 1,176 wooden boxes; and 533 wing frames.

MEETINGS AND RECEPTIONS

The United States National Museum, with its fully equipped auditorium and lecture room, is precluded by its limited maintenance funds from initiating courses of lectures in its own behalf. It freely offers its meeting facilities, however, to organizations of kindred purposes for their regular and special gatherings, assisting, so far as possible, in carrying out their programs. The auditorium and the lecture room were utilized on 125 occasions during the year. The contacts made and the variety of interests served will be seen from the following list of organizations using these facilities and the names of the speakers with the titles of the lectures delivered:

1928

August 15, 11 a. m. (auditorium): Orphans' Pilgrimage. Erie (Pa.) Times. Address of welcome by Dr. A. Wetmore.

September 15, 1 p. m. (room 43): Boy Scouts.

September 17, 11.30 a. m. (auditorium): Motion pictures of animals and birds in the private collection of Mr. and Mrs. Victor Evans, under the direction of Dr. A. Wetmore.

September 22, 1 p. m. (room 43): Boy Scouts.

October 3, 8 p. m. (auditorium): The Washington Society of Engineers. Illustrated lecture by Edward P. Warner, Assistant Secretary of the Navy, on "Developing the Flying Boat."

October 4, 8 p. m. (room 43): The Entomological Society of Washington. Addresses by A. H. Clark on "Butterflies of the District of Columbia" and by H. S. Barber on "Cave and Oother Subterranean Beetles."

October 6, 2 p. m. (auditorium): The National Association of Retired Federal Employees. Business meeting.

October 6, 3.30 p. m. (room 43): Boy Scouts.

October 9, 4.30 p. m. (room 43): Society for Philosophical Inquiry.

October 9, 8 p. m. (room 43): American Horticultural Society. Illustrated address by Knowles A. Ryerson, of the United States Department of Agriculture, on "A Horticulturist's Rambles in Palestine."

October 13, 3.30 p. m. (room 43): Boy Scouts.

October 16, 4.45 p. m. (room 43): Anthropological Society of Washington.

October 20, 3.30 p. m. (room 43): Boy Scouts.

October 22, 23, 11.15 a. m. and 1.30 p. m. (room 43): Boy Scout Executives of the Scout Councils. Third Regional Executive Seminar.

October 27, 3.55 p. m. (room 43): Boy Scouts.

October 29, 11.45 a. m. (room 43): Annual meeting of the Smithsonian Relief Association.

November 1, 8 p. m. (room 43): The Entomological Society of Washington. Memorial to Dr. E. A. Schwarz, by Dr. O. L. Howard; and an illustrated lecture on "Some Facts about Chitin" by Dr. F. L. Campbell.

November 3, 2 p. m. (auditorium): National Association of Retired Federal Employees. Business meeting.

November 3, 3.30 p. m. (room 43): Boy Scouts.

November 7, 11.30 a. m. (auditorium): Forest Service, United States Department of Agriculture. Illustrated address by Dr. L. O. Howard on "Habits and Methods of Combating the Gypsy and Brown Tail Moth."

November 7, 8 p. m. (auditorium): The Washington Society of Engineers. Illustrated address by Dr. W. L. Calver, chairman of the Field Exploration Committee of the New York Historical Society, on "Exploration of the Crusader Fortress of Montfort in Palestine."

November 10, 3.30 p. m. (room 43): Boy Scouts.

November 13, 4.45 p. m. (room 43): Society for Philosophical Inquiry.

November 13, 8 p. m. (room 43): American Horticultural Society. Illustrated address by Dr. Edgar T. Wherry on "Cultivation of Wild Flowers."

November 14, 8 p. m. (room 43): The Wild Flower Preservation Society. Illustrated address by P. L. Ricker on "Wild Flowers."

November 17, 3.30 p. m. (room 43): Boy Scouts.

November 20, 4.45 p. m. (room 43): Anthropological Society of Washington. Address by Matthew W. Stirling on "The Acoma Origin and Migration Legend."

November 24, 3.30 p. m. (room 43): Boy Scouts.

December 1, 2 p. m. (auditorium): National Association of Retired Federal Employees. Business meeting.

December 1, 3.30 p. m. (room 43): Boy Scouts.

December 5, 11.30 a. m. (auditorium): Forest Service, United States Department of Agriculture. Illustrated address by Dr. John S. Boyce, of the department, on "Diseases of Trees."

December 8, 3.30 p. m. (room 43): Boy Scouts.

December 11, 4.45 p. m. (room 43): Society for Philosophical Inquiry.

December 11, 8 p. m. (room 43): American Horticultural Society. Address by Miss Marjorie F. Warner, of the United States Department of Agriculture, on "Life Histories of Gardening Books."

December 13, 8 p. m. (room 43): The Entomological Society of Washington. Business meeting and addresses by Dr. Paul Bartsch on "Field Experiences with Cuban Insects," and Dr. N. E. McIndoo on "Tropisms and Sense Organs of Lepidoptera."

December 15, 3.30 p. m. (room 43): Boy Scouts.

December 15, 5 p. m. (room 43): The Helminthological Society.

December 22, 3.30 p. m. (room 43): Boy Scouts.

1929

January 2, 3, 4, 5, 10 a. m. (room 43): Bureau of Fisheries, United States Department of Commerce. Biennial conference of the Division of Scientific Inquiry.

January 3, 8 p. m. (room 43): The Entomological Society of Washington. Business meeting, with addresses by visiting entomologists and notes and exhibition of specimens.

January 5, 2 p. m. (auditorium): National Association of Retired Federal Employees.

January 8, 4.30 p. m. (room 43): Society for Philosophical Inquiry.

January 8, 8 p. m. (room 43): American Horticultural Society. Illustrated lecture by F. L. Mulford on "Growing of Roses."

January 9, 11 a. m. (auditorium): Motion pictures of Hawaiian birds shown under auspices of Dr. A. Wetmore.

January 12, 11 a. m. (room 43): Howard University medical students, under auspices of Dr. Paul Bartsch. Address by Dr. Harrison G. Dyar on "Mosquitoes."

January 14, 11 a. m. (room 43): Boy Scouts of America. Third Regional Scout Executive Seminar.

January 15, 4.45 p. m. (room 43): Anthropological Society of Washington.

January 17, 7.30 p. m. (auditorium): The Wild Flower Preservation Society. Motion pictures shown of birds and wild flowers.

January 19, 11 a. m. (room 43): Howard University students, under auspices of Dr. Paul Bartsch. Illustrated lecture by Dr. H. E. Ewing on "Microbes and Insects."

January 19, 3.30 p. m. (room 43): Boy Scouts. Illustrated lecture by Dr. William F. Foshag on his trip to Mexico.

January 19, 5 p. m. (room 43): The Helminthological Society.

January 26, 11 a. m. (room 43): Howard University Medical Students. Address by Dr. J. M. Aldrich on "Insects and Their Relation to Medicine."

January 26, 4.30 p. m. (room 43): Boy Scouts. Illustrated lecture by Dr. Ray S. Bassler on "Cave Exploration in Europe and America."

January 30, 5 p. m. (auditorium): Early Birds. Lecture by Dr. A. Wetmore on "Birds in the Hawaiian Islands," illustrated with motion pictures and lantern slides.

February 2, 2 p. m. (auditorium): National Association of Retired Federal Employees. Business meeting.

February 2, 3.30 p. m. (room 43): Boy Scouts.

February 6, 11.30 a. m. (auditorium): Forest Service, United States Department of Agriculture. Illustrated address by P. G. Redington on "Alaska."

February 7, 8 p. m. (room 43): The Entomological Society of Washington. Addresses by S. A. Rohwer, retiring president, on "Economical Aspects of Taxonomic Entomology," and by W. H. White on "The A B C of Crop Entomology."

February 9, 3.30 p. m. (room 43): Boy Scouts.

February 12, 4.30 p. m. (room 43): Society for Philosophical Inquiry.

February 16, 3.30 p. m. (room 43): Boy Scouts.

February 22, 3.30 p. m. (auditorium): Patriotic meeting, under auspices of the Masonic Clubs of the District of Columbia. Address by Congressman C. A. Woodrum, of Virginia, on "George Washington"; music furnished by Masonic Band.

February 23, 3.30 p. m. (room 43): Boy Scouts.

February 28, 8 p. m. (auditorium): Potomac Garden Club. Business meeting.

March 2, 2 p. m. (auditorium): National Association of Retired Federal Employees.

March 2, 3.30 p. m. (room 43): Boy Scouts.

March 8, 8 p. m. (room 43): The Entomological Society of Washington. Address by Dr. William Schaus on "Collecting Butterflies in the American Tropics," with notes and exhibitions of specimens.

March 9, 3.30 p. m. (room 43): Boy Scouts.

March 12, 4.30 p. m. (room 43): Society for Philosophical Inquiry.

March 16, 3.30 p. m. (room 43): Boy Scouts.

March 16, 5 p. m. (room 43): Helminthological Society.

March 19, 4.30 p. m. (room 43): Anthropological Society of Washington.

March 21, 2.30 p. m. (auditorium): Geological Survey, United States Department of the Interior. Fiftieth anniversary celebration.

March 21, 8 p. m. (room 43): The Wild Flower Preservation Society. Illustrated address by Dr. Edgar T. Wherry on "Wild Flowers."

March 30, 3.30 p. m. (room 43): Boy Scouts.

April 4, 8 p. m. (room 43): The Entomological Society of Washington. Illustrated address by F. M. Wadley on "Chiggers" and address by H. E. Ewing with notes and exhibition of specimens.

April 6, 11 a. m. (auditorium): Motion pictures shown under the auspices of Dr. A. Wetmore.

April 6, 2 p. m. (auditorium): The National Association of Retired Federal Employees. Business meeting.

April 6, 3.30 p. m. (room 43): Boy Scouts.

April 9, 4.30 p. m. (room 43): The Society for Philosophical Inquiry.

April 13, 3.30 p. m. (room 43): Boy Scouts.

April 16, 4.45 p. m. (room 43): Anthropological Society. Address by Rev. Beard Haile on "Life Among the Navajo Indians."

April 17, 7 p. m. (auditorium): Farmers of Maryland, Virginia, and District of Columbia. Business organization meeting.

April 17, 8 p. m. (room 43): The Wild Flower Preservation Society. Address by Alvah Godding on "Trees."

April 20, 3.30 p. m. (room 43): Boy Scouts.

April 24, 8 p. m. (auditorium): The Washington Society of Engineers. Address by Dr. Theodore Rheiboch on "Hydraulics and Hydraulic Laboratory," illustrated with lantern slides and motion pictures.

April 25, 10.30 a. m. (auditorium): Sixth national oratorical contest. Addresses made by the following contestants: James Leonard Butsch, of St. John's College; Miss Mary Eugina Hardy, of Takoma-Silver Spring High School; and Cary Howard Blackwell, of Alexandria High School.

April 27, 3.30 p. m. (room 43): Boy Scouts.

May 1, 11.30 a. m. (auditorium): Forest Service, United States Department of Agriculture. Motion pictures on forestry were shown.

May 2, 8 p. m. (room 43): The Entomological Society of Washington. Address by Dr. C. L. Marlatt on "The Mediterranean Fruit Fly Situation in Florida," with discussions by members, and notes and exhibition of specimens.

May 4, 2 p. m. (auditorium): The National Association of Retired Federal Employees. Business meeting.

May 4, 3.30 p. m. (room 43): Boy Scouts.

May 11, 3.30 p. m. (room 43): Boy Scouts.

May 11, 8 p. m. (auditorium): The Biological Society of Washington. Illustrated lecture by Dr. F. A. Varrelman on "Action of Cells."

May 14, 4.30 p. m. (room 43): The Society for Philosophical Research.

May 14, 8 p. m. (room 43): American Horticultural Society. Address by B. Y. Morrison on "Flowers."

May 18, 3.30 p. m. (room 43): Boy Scouts.

May 18, 5 p. m. (room 43): The Helminthological Society.

May 21, 2 p. m. (auditorium): The fifth annual national spelling bee. First prize won by Miss Virginia Hogan, representing the Omaha World Herald; second prize by Miss Viola Strbac, representing the Milwaukee Journal; and third prize by Teru Hayashi, representing the Atlantic City Press.

May 25, 3.30 p. m. (room 43): Boy Scouts.

May 28, 11 a. m. (auditorium): Public Schools, Divisions I–IX, and Forest Service, United States Department of Agriculture. Talk by Dr. H. A. Smith, of the department, on "Protection of Forests," illustrated by motion pictures.

May 28, 8.15 p. m. (room 43): Botanical Society of Washington. Illustrated lecture by Dr. Reginald Buller on "Botany."

May 29, 3.30 p. m. (auditorium): The Veterans of Foreign Wars of the United States, Federal Post No. 824, United States Department of Agriculture. Annual memorial services for deceased veterans of the Department of Agriculture. Music by the United States Navy Band.

June 1, 2 p. m. (auditorium): National Association of Retired Federal Employees. Business meeting.

June 3, 4, 9.30 a. m. (room 43): Public Health Service, Treasury Department. Twenty-seventh annual conference of State and Territorial Health Officers with the Public Health Service.

June 6, 8 p. m. (room 43): The Entomological Society of Washington. Addresses by L. O. Howard on "Observations on Some Entomologists and Their Work on a Recent Western Trip," illustrated with lantern slides, and by R. E Snodgrass on "Reviews of Some European Literature on Insect Morphology" and notes and exhibition of specimens.

June 8, 1 p. m. (room 43): Boy Scouts.

June 15, 1 p. m. (room 43): Boy Scouts.

June 19 to 25, 9 a. m. (auditorium and room 43): Extension Service, United States Department of Agriculture. Conference of the National Farm Boys

and Girls 4–H Club Camp. Conferences were held and addresses made by C. W. Warburton, director of extension; by C. B. Smith, chief officer of cooperation extension work; John Alexander, director of the American Young Foundation; Representative Ruth Bryan Owens, of Florida; R. W. Dunlap, Assistant Secretary of Agriculture; and Leonard W. Kephart, of the department. On the evening of June 25 a pageant was given which, on account of rain, could not be held on the Department of Agriculture grounds, as originally planned.

June 20, 8 p. m. (room 43): Vivarium Society.

June 20 to 28, 9 a. m. (auditorium and room 43): The American Dairy Science Association. Address of welcome by A. F. Woods, of the United States Department of Agriculture, and meetings each day.

June 28, 8.15 p. m. (auditorium): The Aero Club of Washington. Motion pictures.

Memorial meetings.—A memorial meeting was held in room 43 on the afternoon of October 16, 1928, at 3.30 to commemorate the services to the institution and to science of the late Dr. Eugene A. Schwarz. Doctor Wetmore was chairman, and among those who addressed the meeting were Doctors Wetmore, Howard, Aldrich, Bartsch, Mr. Rohwer, and others.

On March 26, 1929, at 3 p. m., a memorial meeting was held in room 43 in commemoration of the services of the late Robert Ridgway. Doctor Wetmore served as chairman and addresses were made by Doctors Palmer, Fisher, Stejneger, and Bartsch and Messrs. H. W. Dorsey and B. A. Bean.

Receptions and special exhibitions.—On the afternoon of May 16, 1929, from 4.30 to 6 p. m. an informal reception was tendered by the Secretary and Mrs. Abbot for the staff and employees of the Smithsonian Institution and its branches, and the adult members of their families, in the main hall, first floor, of the Smithsonian Building. In the receiving line with the Secretary and Mrs. Abbot were Doctor and Mrs. Wetmore and Mrs. Charles D. Walcott.

An exhibit of the work of students in the Department of Architecture of the George Washington University was held in the Natural History Building from April 21 to May 6, 1928. Twenty-two full-length and four half-length screens were used, on which were displayed colored and black and white drawings, water colors, pencil and pen and ink sketches, and working drawings.

From May 15 to 27, 1929, there was displayed in the Natural History Building an exhibition, by negro artists, assembled under the auspices of the Harmon Foundation and shown under the patronage of the committee on race relations of the Washington Federation of Churches. The exhibit was composed of oil paintings, drawings, and pieces of sculpture, among which were included busts of prominent members of the Negro race.

CHANGES IN ORGANIZATION AND STAFF

Changes in the organization and staff during the year have been comparatively few, personnel conditions having been improved by the Welch Act amending the classification act of 1923, which went into effect on July 1, 1928. Nearly all of the Museum employees were previously in the first or second salary step of their respective grades, and thus received the 2-step promotion under the Welch Act, in addition to which the majority also received an efficiency promotion. This has tended to a more stable personnel, the changes in the scientific staff being few.

At the close of the fiscal year the work of the Museum was carried on by 47 professional and scientific employees, 42 subprofessional employees, 41 clerical, administrative, and fiscal workers, and 181.5 in the custodial service—311 in all. In addition, some 54 other specialists hold honorary appointments in the Museum, many of these devoting much time to work on the national collections.

A cooperative arrangement was entered into between the Museum and the Bureau of Plant Industry, United States Department of Agriculture, by which the bureau has undertaken the maintenance of the C. G. Lloyd mycological collection, agreeing to keep it as a separate unit in steel cases in a fireproof building and to so arrange it that it may be of maximum usefulness to professional students of fungi. Dr. John A. Stevenson, of the bureau staff, was on July 16, 1928, given an honorary appointment in the Museum as custodian of this collection. Other changes in the division of plants consisted of the appointment on November 16, 1928, of two aides, Conrad V. Morton and Egbert H. Walker, both of whom had served the Museum previously in a temporary capacity. Albert C. Smith was given an honorary appointment as collaborator for one year, beginning February 15, 1929. W. J. Dennis was given a similar appointment on March 1, 1929, for a period of nine months.

In the division of mammals, a newly created position of assistant curator was filled on August 2, 1928, by the appointment of Dr. Remington Kellogg, by transfer from the Biological Survey, United States Department of Agriculture.

In the division of insects the interest and valued voluntary aid of J. T. Barnes were recognized by his appointment on May 11, 1929, to the honorary position of collaborator in the section of lepidoptera.

In the divisions of mineral and mechanical technology, Frank A. Taylor was advanced on August 1, 1928, from aid to assistant curator.

The library staff was strengthened by the establishment of a position of assistant librarian, in immediate charge of the accessions department of the library, to which place Miss Ethel A. L. Lacy was appointed on September 17, 1928.

W. L. Brown was advanced to the position of chief taxidermist with general oversight of the work of the taxidermy shop.

Two employees left the service through provisions of the retirement act: William H. Kimball, on June 29, 1929, after a total Government service of about 46 years nearly 45 of which were in the National Museum, the last 38 years as its finance clerk; and Robert Stokes on June 11, 1929, after a service of 28 years on the Museum labor force. Mr. Kimball left a record for reliability and faithful attention to duty which will be hard to surpass.

The Museum lost, through death during the year, six of its actice workers and four members of its honorary scientific staff as follows: Robert Ridgway, curator of birds, on March 25, 1929; Capt. John Donnell Smith, associate in botany on December 2, 1928; Dr. E. A. Schwarz, custodian of coleoptera on October 15, 1928; Dr. Harrison G. Dyar, custodian of lepidoptera, January 21, 1929; H. K. Harring, custodian of rotatoria on December 19, 1928; Charles E. Mirguet, taxidermist, on February 20, 1929; Mrs. E. Bennett Decker, clerk-illustrator, on August 29, 1928; Eustance S. Brannon, watchman, on September 30, 1928; Frank Smith, laborer, on November 16, 1928; and William T. Murray, laborer, on June 9, 1929.

Robert Ridgway, ornithologist of the National Museum from 1874 to 1881, and curator of the division of birds since the latter date, died March 25, 1929, after an illness of one day. Mr. Ridgway was born at Mount Carmel, Ill., on July 2, 1850, and from his earliest youth was deeply interested in the subject of birds and in their portrayal by means of colors of his own manufacture. In 1864 he learned of Professor Baird, in Washington, and sent him some drawings for identification. He was delighted to get the drawings back, properly named, with a letter and some pamphlets, including Baird's Catalogue of Birds of North America, issued in 1858. Correspondence was continued with Professor Baird, who in 1867 recommended him for the place of naturalist on the survey of the fortieth parallel, under Clarence King, an appointment he eagerly accepted, and for two years he was engaged in field work in the West. Upon his return he was busy preparing a report on his collections, and was also associated with Professor Baird and Dr. T. M. Brewer on a large undertaking—the "History of North American Birds," of which three volumes ("The Land Birds")

were published early in 1874 and two others ("The Water Birds") in 1884.

Mr. Ridgway continued his interest in bird portraiture and illustrated some of the important reports of the day. He was an adept in the use of colors, of which he had made a deep study, and brought out two works on the subject, the "Nomenclature of Colors" in 1886 and the "Color Standards and Color Nomenclature" in 1912. In addition to ornithology, Mr. Ridgway was much interested in botany and horticulture. His last important work was the "Birds of North and Middle America," of which eight volumes were published between 1901 and 1919, and he was engaged on the ninth and tenth volumes of this work at the time of his death. His writings are voluminous and extensive and form such important contributions to his branch of science that he has been recognized as the foremost ornithologist of his day.

Friendly, but unassuming in personality, always modest and retiring in disposition, Mr. Ridgway was on the most cordial terms with all who came to know him. The rapidity with which he advanced from an unknown youth to one of the chief authorities on North American birds seems at this distant day an achievement almost incredible.

Capt. John Donnell Smith, associate in botany, died at his home in Baltimore, Md., December 2, 1928. Born in Baltimore, June 5, 1829, Captain Smith at the time of his death was the oldest living graduate of Yale University, and lacked but a few months of rounding out a full hundred years. Following his service as captain of artillery in the Confederate Army in 1864 and 1865 he entered business, retiring in the early eighties to devote himself to botanical studies, in which he had long been interested. He gave special attention to the flora of Central America, and, beside making large collections personally in Guatamala and Costa Rica, encouraged others to carry on botanical investigations in the same field. In this way, and through exchange with important foreign and American herbaria, to which specimens were distributed by him very freely, Captain Smith assembled a herbarium of more than 100,000 specimens, notably rich in material from Central and South America, which served as the basis of many published papers in which he described hundreds of new species from Central America. In 1905, his herbarium and invaluable library were presented to the Smithsonian Institution, both adding immeasurably to the value of the national botanical collections.

To those who were fortunate enough to know Captain Smith and to enjoy his courteous hospitality his death has brought a deep

sense of personal loss. Professionally his service to the science of botany was of the highest type, for in addition to distinguished technical accomplishment he possessed special ability in the languages. His collections will long stand as a monument to his unselfish devotion to botany.

Dr. E. A. Schwarz, custodian of the section of coleoptera, an honorary fellow of the Entomological Society of America, died in Washington on October 15, 1928, at the age of 84 years and 6 months. Of that long life, 55 years were spent in this country, and more than 50 of those years in the service of the United States Government.

Doctor Schwarz was born at Liegnitz, Silesia, April 21, 1844. As a boy he became interested in entomology and later was a student at the University of Breslau and the University of Leipzig. In December, 1872, he came to the United States and became an assistant to H. A. Hagen at Cambridge, Mass. In 1874 he went with H. G. Hubbard to Detroit, where they founded the Detroit Scientific Association and built up a collection of insects. With Hubbard he made explorations in Florida and in the Lake Superior region, and published papers on the coleoptera of those regions. In the summer of 1878, on recommendation of Dr. J. L. LeConte, he became an assistant to C. V. Riley in Washington in the closing work of the United States Entomological Commission. On November 15, 1878, he was definitely appointed an assistant in the United States Department of Agriculture, where he remained until August 27, 1926, when he was pensioned and retired for age.

Doctor Schwarz was one of the most learned entomologists in the United States. He was an exceedingly close observer, a great collector, and a very broad student of entomology, attracted to both the taxonomic and the biological sides of the study of insects. He was a great mine of information and was constantly consulted by the younger men about him. He published no *magnum opus*, but very many short papers, all of great merit. He shunned publicity, and yet he was known among the entomologists of this country, and of other countries as well, as a man of very great learning and of the highest standing. His influence on the character of American entomology was very great.

Dr. Harrison Gray Dyar, custodian of the section of lepidoptera, was born in New York City, February 14, 1866. He was educated at the Roxbury Latin School, at the Massachusetts Institute of Technology, and at Columbia University. He took his bachelor's degree at the Massachusetts institute in 1889. In 1893 he returned and took the last year of its biology course, going the following summer to Woods Hole. He then went to Columbia University, gaining his A. M. in 1894 and his Ph. D. in 1895. In 1894 he pub-

lished an important paper on the classification of lepidopterous larvae, which attracted the attention of entomologists, and, meeting him in 1897, Dr. L. O. Howard invited him to come to Washington. The invitation was accepted and he became custodian of the collection of lepidoptera in the United States National Museum, a place which he still held at his death. For a comparatively short period he was in charge of the whole of the insect collections of the Museum.

When the attention of the world turned to mosquitoes as the result of the discoveries concerning their disease-bearing function, Doctor Dyar began to study mosquito larvae—at first because they were larvae and he had been studying intensely the larvae of another group of insects. Later he saw the importance of this stage to a thorough understanding of the Culicidae, and from this he became interested in everything about mosquitoes. He was associated with L. O. Howard and F. Knab in the preparation of a monograph on the mosquitoes of North and Central America and the West Indies for the Carnegie Institution of Washington.

Many important papers on diptera and lepidoptera came from his pen and he was recognized as a foremost authority in his field. His life was one of intense scientific activity and one which undoubtedly has made important contributions to human knowledge.

Mr. Harry K. Harring, custodian of rotatoria, died December 19, 1928. He was born on December 20, 1871, at Nykjobing, Denmark, graduated from the high school, and, following that from the Technical School at Skanderborg, Denmark. For four years following his graduation, he was employed in the design and manufacture of physical and chemical apparatus for school and college laboratories. He came to the United States in 1893, and prior to coming to the Bureau of Standards held a place with the Portland Automatic Scale Co., Portland, Me.

At an early date Mr. Harring became interested in the microscopic life of the fresh waters, and, singling out the rotifers, through painstaking and assiduous study became one of the outstanding specialists in his chosen field. His thorough acquaintance with the literature of the smaller fresh-water and marine organisms led, with the foundation of Biological Abstracts, to his choice as editor for the section rotatoria, gastrotricha, and chaetognatha for that periodical.

Mr. Harring was employed as expert technician in the instrument shop at the Bureau of Standards, where his special project was the improvement of the process of ruling of diffraction gratings, for which he seemed to be especially fitted. At the time of his death he was on the threshold of producing gratings on a parity with the marvelous ones made by Rowland, of Johns Hopkins, which have

never been duplicated or equaled. But the rotifers withal were his recreation and his hobby, to which he gave the spare time of his waking hours, ever far into the night. His untimely death brought to a close his valuable labors on "The Rotifers of Wisconsin," in collaboration with Frank J. Myers, of Ventnor, N. J. This series of papers was much more monographic in scope than the title indicates, and was in a fair way a handbook for these forms for the world, embellished as it was with incomparable drawings, numerous original notes and observations, and extensive references to the literature of the group. A round dozen of papers on rotifers came from his pen.

He was always busy, making each day yield its return in productive work to the utmost, ever friendly, kindly, and helpful. His passing leaves a gap in our active staff and a place among his friends in the institution which can never be filled.

DETAILED REPORTS ON THE COLLECTIONS

REPORT ON THE DEPARTMENT OF ANTHROPOLOGY

By Walter Hough, *Head Curator*

INTRODUCTION

The work of this department during the past year has progressed satisfactorily, bringing many valuable additions to the collections. Explorations in the field by members of the force, which have increased materially in scope and importance, have yielded much information of value, and promise still greater return as they are organized under a plan that is annually expanding as larger funds for their prosecution become available. During the past year field investigations were prosecuted in the Dominican Republic by H. W. Krieger through the cooperation of Dr. W. L. Abbott; in the Bering Sea region of Alaska, particularly on St. Lawrence Island, by Henry B. Collins, jr.; and in Arizona and New Mexico, by Neil M. Judd, The head curator made a reconnaissance in west Texas, examining Pueblo remains at Amarillo and finds indicating antiquity at Abilene. At the close of the fiscal year Doctor Hrdlička, Mr. Collins, and Mr. Judd were again in the field engaged in activities that will of necessity be reported on later.

ACCESSIONS FOR THE YEAR

Accessions in this department for the year numbered 92, with a total of 5,329 specimens. While the accessions are fewer than last year, the number of specimens is far beyond the annual average of the past decade. As the material obtained was in the main collected by expert explorers of the force working in the field, its quality and value are excellent.

In ethnology 39 accessions comprised 4,257 specimens. Most of the objects received came from without the territory of the United States, while from within the States proper the largest collection was from the Hupa Indians of northern California, acquired by transfer from the Bureau of American Ethnology. Alaska supplied the bulk of specimens from any one geographical area, material from this field including a collection made by Henry B. Collins, jr., from stations on Punuk and St. Lawrence Islands, and from ancient sites on the northwestern coast of the mainland of the Territory. This material is the largest collection of a historical-archeological nature ever obtained by the Museum in one season from the Bering Sea

region. It supplies a cross section of early Eskimo culture and is of supreme importance in tracing the history of the Eskimo in western Alaska. A small collection from southeast Alaska, acquired by purchase from C. H. Popenoe, consists of a ceremonial dance robe and armlets of the Chilkat Indians of Lynn Canal, woven from goat fleece and painted with decorative designs of a totemic nature in black, yellow, and green.

Next in the order of their importance in this division are collections from the Belgian Congo and Nigeria in Africa. The Congo collection comes as a gift from Rev. Ellen I. Burk, while the Nigerian and Gold Coast collection is the gift of C. C. Roberts, both being material of an important kind hitherto unrepresented in our series. The collections of E. S. Haskell, M. D. Steever, and others, from the Philippine Islands are scarcely less important than the collection of miscellaneous historical, ethnological, and archeological objects collected by Dr. David C. Graham from Szechuan Province, China. A collection of Chinese brides' headdresses of interesting form was received by transfer from the Bureau of Biological Survey, United States Department of Agriculture. These headdresses are interesting examples of cloisonné or appliqué featherwork on a metal base. Through an exchange with A. S. Kenyon, of Melbourne, Australia, there was acquired a miscellaneous collection of decorative art work on wood, stone, and shell, and in basketry. Stone and wooden message sticks, "churingas," and an assortment of throwing sticks, including decorated boomerangs, illustrate a high degree of development in conventional and totemic art.

In archeology there was a falling off of receipts, the 37 accessions totaling 351 specimens, against 892 in the previous year. Among those obtained the following are worthy of special notice: Fifteen earthenware vessels found in a burial cave near Green Island Post Office, Jamaica, and presented, through C. R. Orcutt, by Charles A. Sangster, Abingdon, Hanover, Jamaica; 7 specimens, including a reed basket and cover, from a rock shelter on Wolf Creek, near Ono, Russell County, Ky., acquired by purchase from J. M. Flanagan; 181 flint and stone implements, bone and copper beads, and similar things collected by Charles Beckman, Arlington, Oreg., from various sites along the Columbia River in Washington and presented by him to the national collections; an earthenware bowl with incised curvilinear decorations, found on Santa Rosa Island, near Pensacola, Fla., and acquired by purchase from Landon Clark; and 22 lots of stone implements collected by Dr. Walter Hough in the vicinity of Abilene, Tex.

Seven accessions, in all 488 specimens, came from the Old World, as follows: A series of 304 specimens collected by Dr. George Grant MacCurdy, director of the American School of Prehistoric Re-

search, from sites at La Madelaine and Castel Merle (near Sergeac), Dordogne, France, and received as a loan from the Archaeological Society of Washington; 3 plaster casts of a pottery cup exhumed by J. Townsend Russell, jr., Washington, D. C., from No. 1 dolmen of Bars, Commune of St. Martin L'Ars, department of Vienne, France, and loaned for the purpose of reproductions; 3 lots totaling 175 objects, mostly of earthenware, gathered from supposedly Han Dynasty caves near Chia-ting, Szechuan Province, China, by Rev. David C. Graham, of Suifu, Szechuan, and forwarded by him for the national collections; 2 Babylonian cuneiform tablets, lent by A. H. Blackiston; and 4 marble carvings received in exchange from E. W. Keyser.

In physical anthropology the accessions were of average amount and value. The most important specimen received was a well-preserved male adult skull from the old river bank at Bonasila on the Yukon. This was exposed by erosion toward the end of the summer of 1928 and collected and sent in by Harry Lawrence, of Anvik, Alaska, who has been urged to watch the bank during times of low water. A valuable addition to our western Eskimo material was made by the collection secured during 1928 on Punuk and St. Lawrence Islands and on the Seward Peninsula by Henry B. Collins, jr. A very valuable accession in ancient remains of man came through the receipt, in exchange, from Oxford University, through Prof. Arthur Thomson, of casts of the child's skull and lower jaw recently discovered at Gibraltar. Another valuable accession consists of 10 first-class Labrador Eskimo masks, received in exchange from Prof. V. Suk, of the University of Brno, Brno, Moravia. These are the only masks of these Eskimo in existence. In addition to the masks, Professor Suk also sent, as part of the same exchange, a valuable series of older Moravian skulls.

INSTALLATION AND PRESERVATION OF COLLECTIONS

In ethnology, Mr. Krieger reports that particular effort has been made to maintain certain flexible exhibits through the installation of temporary displays from time to time, and through a periodic rotation of storage and exhibit material in certain cases. New material has been placed on view to improve or to add to Museum exhibits already installed, and occasionally has replaced old specimens either wholly or in part. Labels have been prepared and placed with all new exhibits. Where newly acquired collections were installed all objects subject to attack by moths and insects were poisoned for their protection. Three loan exhibits, the Navaho silversmith group, the Zuni potters, and the Sioux Indian warrior and Sioux Indian woman group, were renovated and placed again on exhibition. Various exhibits of primitive technology, known as

the "synoptic exhibits," were removed and reinstalled from time to time to accommodate the shifting floor arrangement. Major exhibits added to the floor installation in hall 8 include the objects collected by Rev. David C. Graham in Szechuan Province, China, and the India shawl of Mrs. W. S. Cunningham. In hall 7 the collection of C. C. Roberts, from Nigeria and the Gold Coast of West Africa, was installed in a separate case. Primitive Australian weapons and armor acquired through exchange with the Public Library Museum and Art Galley, Perth, Australia, and from William Lilly and K. R. Moure, were installed in the Australian case in hall 7. Additional miscellaneous objects of minor oriental art collected by Mrs. H. Foster Bain were placed in hall 8 with the balance of her collection that is there installed.

Other smaller collections placed on view include the following: Ceremonial dance robe and armlets from the Chilkat Indians; jewelry and other brasswork of the Bontoc-Igorot of northern Luzon; headdresses worn by Chinese brides, and illustrating appliqué featherwork; Peruvian bows and arrows, presented by Miss Jennie M. Ballou; bull-roarers from the White Mountain Apache Indians of Arizona, collected by Capt. J. G. Bourke, United States Army, and presented by Mrs. A. W. Maish; woven and beaded belt given by Red Jacket, Seneca chief, to Thompson Steele Harris, chaplain, United States Navy, at Niagara Falls during President Tyler's administration, 1841–1845. and presented to the Museum by W. T. Clerk. Much of the Hupa collection acquired this year through transfer from the Bureau of American Ethnology will later be exhibited in hall 11 with other ethnological objects of the Hupa. The figure of a Wachaga man from southeast Africa was removed from a nonstandardized black case and placed with two other lay figures of East Africans. Temporary removal of all ethnological exhibits from the second and third floors of the rotunda was required while these corridors were being cleaned. The textile case in the Ward African collection, the fur robe of the Zulu figure, the bamboo floor of the Dyak family group case, and the Hupa family group in hall 11 were treated with preservatives to prevent the attacks of insects. Rearrangement of the exhibits in the two centrally placed pagodas in hall 8 begun last year after the withdrawal of the General Humphrey collection of Chinese porcelains and bronzes was completed during the current year. "Miss Japan" and her collection of doll's accessories were reinstalled after being temporarily recalled by the office of the Federal Council of the Churches of Christ in America. In this case the use of black letters on gold and the odd size of the label, also the continued series of labeling, starting at the left, are innovations.

The present status of the collections is substantially that of 12 months ago. No additional storage facilities were arranged, and exhibits, with exception of the minor changes here listed, remain as at the close of the previous fiscal year. Housing, care, and classification of objects in storage will need attention for better arrangement soon.

The division of archeology accomplished much during the year in installation and preservation of specimens. Neil M. Judd, curator, reports that during the summer of 1928 Henry B. Roberts, graduate student in anthropology at Harvard University, was employed as temporary assistant in archeology. His efforts were devoted wholly to revision of our Latin-American exhibits, chiefly those from Mexico. In consequence of this able assistance all of our Mexican material—both in the exhibition and study series—is now rearranged according to recognized cultural types. In addition, a collection of funerary offerings discovered by Dr. Edward Palmer in 1888 in a burial cave near the Bay of Angeles, Lower California, has been placed on view for the first time. The replica of the monumental serpent columns from a doorway in the so-called "Castle," the principal temple at the Maya city of Chichen Itza, Yucatan, was transferred from the basement to the Mexican hall. Our series of casts and models of Maya and Aztec temples and stelae was arranged to place them in closer proximity to lesser antiquities from the same regions. Temporary changes have also been made in the exhibits from several South American Republics, chiefly from Peru. Despite plans for regrouping and reinstallation, only minor changes were made in our United States exhibits, because the laboratory work tables were continuously occupied by other collections and routine work in hand. Mr. Paine continued the task of identifying and transferring into their respective States study series accessions previously received, but not properly identified by catalogue numbers. Progress was made in the preparation of Dr. F. H. H. Roberts's Colorado collection, a task, slow at best, that has been prolonged, owing chiefly to lack of sufficient table space on which to sort and assemble the thousands of potsherds and other artifacts involved. This collection comprises the first comprehensive series ever gathered from Pueblo I ruins. Mrs. Loos was occupied for most of her time during the year with the division's card records, a task to which the curator and his assistants have devoted much time since 1912, which was completed as the fiscal year came to a close. For the first time all the division's records are now in serviceable order.

On December 1, 1928, James Townsend Russell, jr., of Washington, D. C., was appointed temporary assistant in archeology, and began the task of classifying material previously received from the Archaeological Society of Washington, work that was continued

only until December 10, when personal affairs interrupted and prevented resumption of Mr. Russell's duties in the division. In addition to this, during the year the collection from prehistoric sites in France was gone over carefully and brought up to date, the identification, classification, cataloguing, and numbering of the material being carried on by Mr. Russell.

Doctor Hrdlička reports for the division of physical anthropology that there were installed six cases of new exhibits: 3 on variation in the jaws and teeth; 1 of excellent casts of new remains of early man; and 2 of bronzed facial masks, 1 of Eskimo, and 1 of African negroes. In addition, there was installed an exhibit showing semipathological deformities of the skull. Other additions of importance were made to existing exhibits. As to the study collections, there was a slow but steady progress in cataloguing. Much preparatory work in this line was done on the very valuable Huntington collection, which contains the skeletal remains of over 1,500 well-identified white Americans.

In the collection of musical instruments the American pianos of the Hugo Worch collection were all provided with labels, and labeling the remainder is in progress. The supervision of the collection by George D. McCoy was continued.

In the section of ceramics gifts were received from Mrs. May Priaulx Haynes of five specimens of Staffordshire vases; from Mrs. Holtzman Tolson of five period china cream pitchers of much interest; and from Miss Margaret A. R. Stottlemeyer, of Frederick, Md., a fine Bennington pitcher of 1849.

The art textile collection was removed in its entirety to the northwest basement range of the Natural History Building, where it was arranged in excellent order by R. A. Allen. The new location is far superior in exhibition conditions to that of the former situation in the old Museum. During the year the laces in this collection were identified by an expert and labels printed and placed on the specimens.

The anthropological laboratory, under the direction of W. H. Egberts, carried out a much-increased program of work for the department, for the art gallery, and incidentally for other sections of the Museum. Progress was made on a carved-wood model of Pueblo Bonito, on a scale of 1 inch to 20 feet, for the division of archeology.

INVESTIGATION AND RESEARCH

In ethnology, research by members of the staff was restricted for the most part to the study of new material obtained on exploring and collecting trips. Publications on the Eskimo art of western Alaska, on the Choctaw and Calusa Indians of Mississippi and

Florida by Henry B. Collins, jr., and on the material culture of the aborigines of the Dominican Republic and on the Indian villages of the southeast by Herbert W. Krieger, are the direct result of research of this type. Other research projects, based not on exploration but on Museum collections, resulting in publications, are on Indian costumes in the United States National Museum by Herbert W. Krieger, and on the pterion by Henry B. Collins, jr. Dr. Walter Hough studied the " Folsom culture," and wrote articles based on the following research projects: The development of fire culture, fixity of racial art, the buffalo as a culture animal, origin of seating furniture, and on aspects of the origin and development of agriculture.

Researches by investigators outside the Museum, based on Museum material, were made on blowguns, on the ethnology of Panama, Rio Grande, and other Pueblo pottery, distribution of the swastika design in aboriginal America, Lolo armor, the Ward African collection, Acoma Pueblo music, Klamath and Hupa ethnology, Eskimo lamps, decorated wooden pipes from the Pacific northwest coast, basketry from Malaysia (Abbott collection), on the textiles of the Southwest, on methods of work employed in the division by several students and scientists, and on methods used in the anthropological laboratory by several students.

The Patent Office was aided again this year in its search regarding priority of primitive inventions. Opium pipes were identified for the Bureau of Customs, and the Bureau of Customs and the General Post Office were aided in the appraisal of antiques. Others were given assistance whenever possible to the extent of our resources. Mr. Li, a student from Korea, was aided in his study of the American Indian; Mr. Inman, of the Prairie Farmer, Chicago, studied the agricultural implements of the Indian with a view to obtaining a series of cover designs for his magazine; George Ravenel Sass, author, was shown frontier costumes; several students of special subjects in American frontier history were shown the Catlin paintings for study or reproduction; dolls of the Eskimo and of the American Indian were studied by several students; Dr. Max Uhle, of the National Museum, Ecuador, was aided in studying divisional and departmental methods of recording and classifying specimens; Dr. Waldemar G. Bogoras-Tan, of the Leningrad Academy of Sciences, was shown the anthropological laboratory and given instruction regarding installation of group exhibits; Doctor Thalbitzer inspected the division's Eskimo collection; Doctor Strong, of the Field Museum, Chicago, inspected material from the Columbia Valley and conferred with the curator relative to further explorations there. A special exhibit was prepared for display during inauguration week

in the Washington Building. Patent attorneys were shown the collection of Indian moccasins and instructed regarding the use by Indians of nonreversible cuffs on moccasins and leggings. Fifteen lots of material were received for identification and report. Many additional examinations were made for individuals who brought ethnological objects to the Museum in person.

In the division of archeology Mr. Judd was absent in July for two weeks while investigating the reported association of flint projectile points and the remains of extinct bison near Folsom, N. Mex. During such times as were available from routine duties he reexamined the collection from Betatakin in the Navajo National Monument, Ariz., and submitted a report on the institution's work of 1917 in the excavation and repair of that ruin.

During the year the division was visited by more staff members of other museums and research institutions than ever before. Two students engaged in extended investigative work with our collections: (1) Henry B. Roberts, of Harvard University, spent one week during early April gathering data pertaining to our prehistoric Southwestern material for Dr. A. V. Kidder, of the Carnegie Institution of Washington; (2) K. M. Chapman, of the Anthropological Laboratories, Santa Fe, N. Mex., examined the same collections, and the pottery series from modern Pueblos during three days in mid-May. Sixteen specimens, including bells and other copper objects, from prehistoric ruins in New Mexico and Arizona were sent for chemical analysis to the Peabody Museum of Harvard University, Cambridge, Mass., and subsequently were returned.

As heretofore, the curator was consulted on archeological matters by officials of the National Park Service and the National Geographic Society. As a former member of the executive committee, division of anthropology and psychology, National Research Council, he was frequently asked to advise the retiring chairman of that division, Dr. Knight Dunlap. As a trustee of the Archaeological Society of Washington and chairman of its research committee, the curator advised with representatives of that society at various times. In consequence of this aid the latter organization paved the way for successive explorations at prehistoric sites in Spain. The contemplated expeditions should result in additional and worth-while collections for the division. During the fiscal year 25 lots of archaeological material were received for identification and report and returned to the senders.

As noted above, the curator visited, on behalf of the Institution, the quarries near Folsom, N. Mex., from which the American Museum of Natural History and the Colorado Museum of Natural History were removing skeletons of an extinct species of bison found

in direct association with chipped projectile points. Excepting this brief visit during July, the curator has not officially called at other institutions, although the several museums in New York and Brooklyn were visited during early September, on the occasion of the biennial meetings of the International Congress of Americanists.

Following the merging of Old World archeology with archeology as the inclusive title, investigation was carried on by J. Townsend Russell, jr., assistant, on the great collection of chipped stone implements resulting from the work of the American School in France and deposited by the Archaeological Society of Washington.

In the division of physical anthropology a steady though necessarily slow work was carried on by the curator and his assistant in measuring and preparing parts of the collections for the "catalogue" that is being published by the Museum. Especial attention was devoted to the difficult and large Pueblo collections. The curator continued his research on early man and in the field of human evolution, and consistent attention was also given to the problem of early man on the American Continent.

Students or workers avail themselves continually of the facilities of the division and receive all possible assistance, which in some cases at least has included regular lectures or demonstrations.

Workers who have utilized the collections have included Dr. C. J. Connolly, professor of biology at Catholic University, Washington, D. C., who studied facial changes during growth, the subject of variation, and the brain, and Dr. J. Maly, docent in anthropology, Charles University of Prague, who carried on investigations under a fellowship of the Rockefeller Foundation, on anthropometry and variation. Henry B. Collins, jr., of the division of ethnology, United States National Museum, made further studies on the pterion and related structures of the skull. Miss Katharine T. Schindel, of the United States Public Health Service, worked a larger part of the summer of 1928 is anthropometry. Prof. Harriett M. Allyn, of Vassar College, was with us in July, 1928, studying anthropometry. The late Dr. Albert Hale, of the University of Porto Rico, received during the earlier part of August, 1928, instruction in anthropometry. In addition, there were numerous individuals who came to consult certain collections of the division or to discuss with the curator some special problems or studies. Four lots of material were received during the year for examination and report.

DISTRIBUTION AND EXCHANGE OF SPECIMENS

A total of 224 specimens was sent out from the division of ethnology during the fiscal year. Gifts comprised 26 specimens, exchange

191 specimens, and there was one withdrawal of 7 specimens. In addition, five lots of objects with a total of 59 specimens were loaned and subsequently returned.

Nine lots of archeological material have gone to institutions and individuals, as follows: (1) 89 objects were sent to the Royal Ontario Museum of Archaeology, Toronto, Canada, in exchange for European collections not yet received; (2) 6 specimens were forwarded to the Leningrad Academy of Sciences, Leningrad, Union of Socialistic Soviet Republics, in an exchange to be arranged later; (3) 82 archeological objects from various localities in the United States were forwarded as a gift to the Museo Nacional, Santo Domingo City, Dominican Republic; (4) 18 artifacts from the District of Columbia were presented to the University of Porto Rico, Rio Piedras, P. R.; (5) 1 cast of the Tuxtla Statuette was presented to the Toledo Museum of Art, Toledo, Ohio; (6) 69 objects of distinctly artistic merit were loaned to the Toledo Museum of Art, Toledo, Ohio, and subsequently returned; (7) 16 copper artifacts were loaned for chemical analysis to the Peabody Museum of Harvard, Cambridge, Mass., and subsequently returned; (8) 1 cast of an unfinished "tube" of banded slate was sent to Dr. Charles Back, Montezuma, Ind., in exchange for his courtesy in permitting casts to be made from the original; (9) 4 stone implements went to A. S. Kenyon, Melbourne, Australia, as part of the equivalent sent to him in exchange for ethnological material from Australia.

From the Old World archeological collection 30 paleolithic and neolithic artifacts were presented to the University of Porto Rico, Rio Piedras, P. R.; two casts of a prehistoric earthenware cup were sent to J. Townsend Russell, jr., Washington, D. C., in return for the courtesy of permitting us to reproduce the original. Hon. Hoffman Philip withdrew two Phoenician glass bottles.

The division of physical anthropology sent six casts of prehistoric trephining to Oxford University, England, in exchange for the casts of the remains of the recently discovered ancient Gibraltar child, while 15 bronzed masks of African negroes and a lot of photographs were sent to Prof. V. Suk, University of Brno, Brno, Moravia, in exchange for 10 Eskimo masks from Labrador, 9 skulls of older burials of Moravia, 1 face cast of a gypsy, and 3 casts of teeth.

NUMBER OF SPECIMENS UNDER DEPARTMENT

During 1928–29 the department of anthropology received 92 accessions with a total of 5,329 specimens. Of these, 4 accessions with 311 specimens were loans, leaving a permanent increase of 5,018 specimens. The receipts during the period were assigned as

follows: Ethnology, 39 accessions, with 4,257 specimens; American archeology, 37 accessions and 351 specimens; Old World archeology, 7 accessions of 488 specimens; physical anthropology, 17 accessions, with 221 specimens; ceramics, 3 accessions of 11 specimens; and art textiles, 1 accession of 1 specimen.

On June 30, 1929, the total number of specimens in the department was 677,004, as follows:

Ethnology	170,128
American archeology	430,374
Old World archeology	36,122
Physical anthropology	31,186
Musical instruments	2,068
Ceramics	5,693
Art textiles	1,433
Total	677,004

REPORT ON THE DEPARTMENT OF BIOLOGY

By Leonhard Stejneger, *Head Curator*

The two great obstacles to adequate progress in the department of biology, namely, lack of space for the research collections and a sufficient staff to properly care for them, gradually are being overcome. For the previous year added space afforded the national herbarium by the construction of a large gallery has been recorded. During the present year the establishment of two new assistant curatorships not only affords great relief in the divisions affected, but carries with it the hope that additions to the staff of other divisions now handicapped for lack of assistance may be expected in the future.

Field activities of the department have continued about as last year. The cooperation of Dr. W. L. Abbott made it possible to send A. J. Poole and W. M. Perrygo in one party and E. C. Leonard in another for several months to Haiti in continuation of previous investigations. The explorations of D. C. Graham and Arthur de C. Sowerby in China and of Hugh M. Smith in Siam have been continued. E. P. Killip is absent on a botanical expedition to Peru, and J. M. Aldrich shortly before the end of the year proceeded to Europe to work in museums, particularly in London, intending also to do some insect collecting in northern Scandinavia. Paul Bartsch, under the Walter Rathbone Bacon scholarship fund, is now in the field in the West Indies continuing his investigation of last year. James O. Maloney was engaged for about a month in the investigation of the fauna at Matamek River on the north shore of the Gulf of St. Lawrence through the kind invitation of Copley Amory. Dr. Frederick V. Coville, honorary curator, division of plants, who was delegated by the United States Government to attend the Fourth Pan Pacific Science Congress in Java during May, also represented the Smithsonian Institution on that occasion. While in Japan he investigated acid-soil plants in furtherance of studies conducted by him for many years. W. R. Maxon during the early part of the present year visited the Royal Botanic Gardens, Kew, England, and several other European institutions in connection with his studies of the ferns of Jamaica.

ACCESSIONS FOR THE YEAR

While the previous year stands out predominantly as a record year for the number of specimens added to the collections, the present fiscal period in some respects surpasses it. The unprece-

dented increase during 1927–28 was mostly due to the accessioning of the Baker collection of insects from the Philippines and adjacent regions numbering 300,000 specimens. The increment of 1928–29, which considerably exceeds half a million specimens, must therefore be considered a highly satisfactory growth. A brief summary of the more important collections will show that their scientific value is equal to that of any previous year.

The tendency of private collectors to secure permanency for the results and records of their life work by depositing their collections as gifts or bequests in the National Museum has been continued during the present year, it being recognized that by housing irreplaceable collections in the National Museum it is assured not only that they will have necessary care but also that they will be preserved for the students of generations to come.

The principal accessions will be considered in detail under the heads of the various divisions, but there are several large collections of a general nature which deserve mention here. The late Col. Wirt Robinson during his lifetime brought together at his home in Wingina, Va., a select and highly valuable collection of mammals, birds, and insects, which has come through bequest to the National Museum. At his death, which occurred on January 20, 1929, the Institution lost a generous friend of many years standing. The Museum is under great obligation to the National Geographic Society for the splendid collections of birds and plants gathered by Dr. Joseph F. Rock during his exploration in the high mountain regions of the Chinese Provinces of Yunnan and Szechuan. These supplement in an admirable manner the valuable material in vertebrates, insects, mollusks, and crustaceans collected for the Museum by Dr. D. C. Graham in other localities of the same general region. The country immediately to the south in Siam is being explored by Dr. Hugh M. Smith, honorary curator in zoology, United States National Museum, now director of fisheries under the Siamese Government, who sent during the year extensive and highly interesting collections of mammals, birds, reptiles, insects, mollusks, and miscellaneous invertebrates. Finally, there must be mentioned the very valuable material from Haiti, consisting of plants collected by E. C. Leonard, and mammals, birds, reptiles, and cave material gathered by A. J. Poole and W. M. Perrygo, which the Museum owes to its friend and benefactor, Dr. W. L. Abbott, who further donated a collection of Siamese mammals.

Mammals.—Statement has been made above of the mammals collected by Dr. Hugh M. Smith and Dr. D. C. Graham and of the Haitian material collected by A. J. Poole and W. M. Perrygo.

The mammal skins contained in the Wirt Robinson bequest are mostly eastern North American species, both large and small, in rather extensive series of handsomely made skins with complete data and covering a collecting period of about 30 years. The Siamese mammals presented by Doctor Abbott are especially valuable because collected and identified by C. Boden Kloss, the head of the Federated Malay States Museums, with headquarters in Singapore. One of the most valuable accessions that has come to this division during the year is a complete skeleton of an adult sperm whale, presented by Ippei Yokoyama, president of the Oriental Whaling Co., through the interest of Prof. Chiyomatsu Ishikawa. This skeleton was packed and shipped to San Francisco under the personal direction of Ambassador Katsuji Debuchi, who not only took charge of the specimen on its voyage to San Francisco but paid all the cost of the packing and transportation in Japan. The Museum had no adult specimens of this whale in its collection, and the skeleton is probably the first to reach any American museum from Japanese waters. Further noteworthy accessions are as follows: 27 mammal skulls from India, a gift from Gen. William Mitchell, an especially interesting accession, as, among other things, it contained a series of 9 tiger skulls; 1 porpoise skeleton (*Sotalia*) from British Guiana, collected and presented by Prof. Samuel H. Williams, of the University of Pittsburgh; and 2 bats from Ecuador, collected and presented by A. H. Fisher, which represent a genus new to the collection of mammals.

Birds.—A number of important and noteworthy accessions have come in this division. From the National Geographic Society there were received 1,039 bird skins, collected on the high mountains of the Provinces of Yunnan and Szechuan in western China by Dr. Joseph F. Rock. Among the species of particular interest are *Grus nigricollis; Spelaeornis souliei*, a rare wren; several specimens of *Leptopoecile sophiae obscura*, a tit-warbler; *Loxia curvirostra himalayensis*, a crossbill; and a species of *Pyrrhospiza*, of the group of grosbeaks. All of the above are new to the Museum collection. Other birds of interest were the Tibetan eared pheasant, *Crossoptilon crossoptilon;* a purplish blue thrush, *Grandala coelicolor florentes*, and a large paroquet, *Conurus derbianus*. The Col. Wirt Robinson collection included 1,374 skins of birds, 2 eggs and 1 nest, especially notable among these being series of certain North American hawks, and many tropical American hummingbirds, as well as cotypes of several species discovered by Colonel Robinson in Venezuela. A white-collared hawk, *Leucopternis albicollis*, and a woodpecker, *Veniliornis fidelis*, proved new to the Museum. Most of

the material was presented to the institution at the beginning of the fiscal year, and the remainder came by bequest after Colonel Robinson's death. Dr. Hugh M. Smith's collections from Siam included 799 birds, 18 skeletons, and 9 eggs, which admirably supplement his earlier contributions. Part of this material, from the higher elevations of the Khun Tan Mountains, furnished the types of seven species and subspecies new to science, as well as several species previously known though unrepresented in the National Museum, the latter including the pied woodpecker (*Dryobates atratus*). The collections received from Dr. D. C. Graham, of Suifu, China, totaled 221 skins and 531 skeletons from the Province of Szechuan, including material obtained in his expedition to Ningyuenfu a year ago. These supplement admirably previous collections and include a number of forms new to the Museum.

Dr. W. L. Abbott contributed 484 skins, 185 skeletons, and 1 egg from Haiti, collected by A. J. Poole and W. M. Perrygo, of the Museum. These specimens were collected at various points whence additional material was needed, especially on various islets off the coast, and supplement the series already at hand from this island. From the Bradshaw Hall Swales fund the division secured by purchase 41 bird skins and 4 skeletons and alcoholics, representing important desiderata, including *Gisella harrisi*, a genus of owls new to the Museum; skeletons of the courol, *Leptosomus discolor;* and an alcoholic specimen of the Madagascar red-billed nuthatch, *Hypositta corallirostris*. From J. A. Reis, jr., there were received through the Smithsonian Institution 177 skeletons of birds from Cameroun of about 116 species, most of them additional to species already present in this part of the collection, and including the Cape gannet, *Morus capensis*, Hartlaub's duck *Pteronetta hartlaubi*, and the black guinea fowl, *Phasidus niger*. From the National Zoological Park there were transferred 62 skins, 80 skeletons and alcoholics, and 4 eggs, including some desirable parrots, lories and other birds, one a chacalaca, *Ortalis garrula*, being new to the collection. Two eggs of the California vulture, *Gymnogyps californianus*, were received from this source, and also two hybrid herons, crosses between the great white and great blue herons. Other noteworthy accessions were 8 skins of the sharp-winged grouse, *Falcipennis falcipennis*, received in exchange from Toku T. Momiyama; a specimen of the rare ocellated pheasant, *Rheinardius ocellatus*, and a rare magpie, *Temnurus temnurus*, obtained in exchange from the Muséum d'Histoire Naturelle at Paris; representatives of seven recently described forms of birds from Lower California, received as a permanent deposit from the Museum of Vertebrate Zoology at Berkeley, Calif.; a mounted

quetzal, *Pharomachrus mocinno*, the gift of Señor Don Adrian Recinos, minister from Guatemala (the quetzal being the national bird of that country); eight birds from Tunis comprising species not hitherto in the Museum, the gift of Marcus Daly; a series of hawks for skeleton purposes, contributed by Mr. Justus von Lengerke; and 3 birds and 15 eggs of 2 species of lovebirds of the genus *Agapornis* from C. H. Popenoe.

In eggs, the chief acquisitions were 2 eggs of the California vulture from the National Zoological Park and a series of 1,378 eggs and 28 nests received from the late John J. Chickering, obtained originally from the Smithsonian Institution a half century or more ago in return for work performed at that time on the egg collection. Many eggs in the series are now quite rare, including the Eskimo curlew, golden plover, and buff-breasted sandpiper.

Reptiles.—The most interesting accessions received were those from our two collaborators in Asia, Dr. D. C. Graham and Dr. Hugh M. Smith. Two collections from Haiti, one made by J. S. C. Boswell and the other by A. J. Poole and W. M. Perrygo, traveling under the auspices of Dr. W. L. Abbott, have given valuable material. In exchange from the Museum of Comparative Zoölogy there came several species new to the collection.

Fishes.—Collections of fresh-water fishes received from Dr. D. C. Graham from Szechuan included 1,344 specimens and form an important addition to our representation of the fauna of the upper Yangtse. Dr. Homer W. Smith, of New York City, presented some African fishes, among them specimens of lung fishes, *Protopterus annectens* and *Polypterus senegalus*. A series of 81 pairs of otoliths of English fishes was obtained in exchange from William H. Webster, of Barton-on-Sea, England. Don Anastasio Alfaro, San José, Costa Rica, presented a collection of 100 specimens from rivers and streams of the interior of that country. The State Museum of Florida donated 75 specimens from that State. J. Morgan Clements sent an interesting collection of fishes from the tide pools of the island of Tahiti. The Bureau of Fisheries, Department of Commerce, transferred 282 specimens of fishes collected in the vicinity of Greenwood, Miss.

Insects.—The most important accession of the year has been the collection of Lepidoptera received as a permanent deposit from the Brooklyn Museum, which included 66,173 specimens, with types of about 650 species. The material, a most valuable addition to our collections, was transported from Brooklyn by truck and came through in excellent condition. Next in importance, considering the part of the world represented by it, is a large collection of beetles re-

In the section of helminths the total number of specimens received was 1,290, of which 1,085 were from the Bureau of Animal Industry, Department of Agriculture. These include the type and paratype of a new species of tapeworm, three cotypes of trematodes mounted on slides, three slides containing types and paratypes of a new trematode, and the type of another form in this group.

Echinoderms.—The most important accession for the year was a collection of crinoids made chiefly by the cable-repair ships of the Eastern & Associated Telegraph Co. and presented by the British Museum. These have included valuable additions to our series.

Plants.—Many important accessions have come in this division during the year. About 12,000 specimens of plants collected in Szechuan, Yunnan, and the semiindependent kingdom of Mili, China, by Dr. Joseph F. Rock, were received as a gift from the National Geographic Society. About 14,720 specimens from northwestern Haiti were collected for the Museum by E. C. Leonard under the generous patronage of Dr. W. L. Abbott. There were 6,012 specimens received as a transfer from the United States Department of Agriculture, of the latter 888 coming from the Bureau of Biological Survey and 5,123 (mainly grasses) from the Bureau of Plant Industry. There may be mentioned further 2,273 specimens collected in Haiti and the Dominican Republic purchased from Dr. E. L. Ekman; 2,156 specimens, mainly from tropical America, Malaya, and Africa received in exchange from the Royal Botanic Gardens, Kew, England; 1,282 Argentine plants purchased from Prof. S. Venturi, Tucuman, Argentina; 3,713 specimens, mainly from tropical America, the United States, and Labrador, received from the Field Museum of Natural History, Chicago, in exchange; 1,087 specimens from Chile donated by the Rev. Brother Claude Joseph, Temuco, Chile; 1,037 specimens from Brazil, received from the Jardim Botanico, Rio de Janeiro, in exchange; 883 specimens from Cochin China, purchased from Chaplain and Mrs. Joseph Clemens; 684 specimens from Brazil received from the Museu Paulista, São Paulo, Brazil, as an exchange; 558 specimens from China received from the University of Nanking, China, in exchange; 635 specimens, mainly from Mongolia and Indo-China, received from the University of California, Berkeley, Calif., as an exchange; 542 specimens from Jamaica and Ecuador, received from the British Museum (Natural History), London, as an exchange; 334 specimens from Venezuela presented by Prof. H. Pittier, Caracas, Venezuela; 263 specimens from Ecuador, presented by the Rev. Brother G. Firmin, Quito, Ecuador; 2,800 specimens from the Philippines, Canada, and the United States presented by Dr. Le Roy Topping, Honolulu; 1,274 specimens from the eastern United States

presented by E. S. Steele, Washington, D. C.; 438 specimens from Quebec received from the Université de Montreal, Montreal, Quebec, as an exchange; 246 specimens chiefly cryptogams, from Costa Rica, presented by Prof. Manuel Valerio, San Jose, Costa Rica; 301 specimens, mainly European, received from Riksmuseest, Stockholm, Sweden, in exchange.

INSTALLATION AND PRESERVATION OF COLLECTIONS

A habitat group of three specimens of the Mongalla gazelle (*Gazella thomsoni albonotata* (Rothschild)) collected in the Sudan by the expedition of last year of Mr. Beach, Mr. Daly, and Mr. Field, was placed on exhibition at the northern end of the African mammal hall during the year balancing the dik-dik group on the other side. The group was designed, modeled, and mounted by Mr. W. L. Brown, chief taxidermist, who accompanied the expedition and collected the accessories.

A splendid specimen of sable antelope *Hippotragus niger* (Harris), likewise mounted by Mr. Brown, was installed to replace an old specimen in bad repair, excessively faded and poorly mounted. Two jackals and the head of an European ibex were added to the exhibition series. Other work in the exhibition halls has been limited to extensive repairs, especially to some of the larger African antelopes, necessitating rearrangement of the largest case in the African hall. The District of Columbia faunal exhibit has continued under the care of Doctor Bartsch, who has kept it current and made additions whenever possible. Eleven specimens of birds were mounted and installed, and revised label data were prepared for a large part of the exhibit by the division of birds.

Ten half-unit cases were received in the division of mammals during the fiscal year, for the storing of skins. Good progress has been made on the osteological collection in labeling, matching up material, and rearranging and spreading of certain groups. The entire available space for this collection is now occupied with cases, while the entire collection stored remains in a crowded condition. Additional space is now necessary for further arrangement. The half-unit cases added during the year have facilitated the storing and spreading of the general skin collection, which, however, is still in an overcrowded condition, only part having been given proper space. The small skulls and skeletons of cetaceans have been placed in cases and are now in good order, and most of the larger whale skulls and skeletons are properly arranged. Two additional wooden racks have been provided in the whale storage room, together with facilities for the cleaning and degreasing of whale material. A few large skins and quite a number of small skins, including those used

for exhibition purposes, were tanned by the taxidermists. Considerable work has been done in the alcoholic collection in the transfer of specimens to proper containers, the identification of material, especially in the collection of bats, and in general arrangement. The taxidermists have prepared as study specimens about 15 flat skins, 10 made-up skins, and 28 tanned skins of small size. The Museum osteologists have cleaned 143 skulls and 55 skeletons, mounted for exhibition one porpoise skeleton during the present year. Through contract work 387 skulls and 107 skeletons have been cleaned. It is gratifying to report that the various collections in the division of mammals are at this time in better shape than ever before.

Of the bird skins received during the year, about 1,850 were distributed in the study series, while the remaining material, amounting to about 2,540 skins, has been held up for study. Eight half-unit storage cases, with 70 drawers, and 12 quarter-unit cases with 120 drawers were received, and were introduced in the collection. Several cases of duplicate birds were moved to the third tier to relieve congestion in cases below. Some progress was made in respacing the collection of type specimens, but this work was still unfinished at the end of the year. In the course of this undertaking certain clues developed that resulted in the discovery of the type of a tern *Anous frater* Coues, and of a cuckoo *Phoenicophaeus nigriventris* Peale, both of which were properly labeled and incorporated in the type series. Seven cases of foreign eggs covering 87 families were rearranged and supplied with drawer labels. Over 200 skeletons were numbered, labeled, and entered on the card catalogue. Work of the preparators included cleaning 338 skeletons and 13 skulls, skinning 125 birds, mounting 11 birds for the local exhibit, and preparing 19 eggs.

In the division of reptiles and amphibians, Miss Cochran has given permanent places in the stacks to 2,841 newly identified specimens, and the card cataloguing of most of these specimens has been completed. Every jar in the collection has been gone over, washed, refilled, and the labels renewed when necessary. A number of cork-stoppered bottles of an obsolete style were replaced by standard glass-stoppered jars, to the great improvement of the condition of the collection. The various genera in the skeleton collection have been grouped together in the storage cases so that it is possible to find particular specimens without difficulty. The present status of the collection is excellent.

All material received by the division of fishes during the year has been identified and reported upon and the storage rooms have been thoroughly inspected, shelves cleaned, and containers refilled where necessary. Many illegible labels have been restored, and all

material determined has been installed in the storage rooms except one lot now under study. New labels have been made for the material on exhibition and the containers refilled.

Very material assistance in the care of the enormous insect collection has come through the cooperation of specialists of the Bureau of Entomology, who are engaged in investigation dealing with various sections. L. L. Buchanan reports that work on the Casey collection made possible through the assistance of Mrs. Laura Welch Casey, which includes entering types in the catalogue and labeling and placing the specimens in standard trays and drawers, is now about 80 per cent complete. He also reports that due to the interest and generosity of Mrs. Casey 200 of the volumes in the Casey library have now been bound. Work on the Baker collection has been progressing, and in a few groups there has been marked progress in the installation of specimens in the general collections; in Hemiptera the installation and transfer now being complete.

In the general collection in the order Coleoptera H. S. Barber has expanded and arranged several small groups. Doctor Böving has supervised the relabeling of the collection of Carabid larvae deposited in the Museum by C. C. Hamilton, and has added a considerable number of anatomical slides to the collections, these consisting mostly of preparations which he has made in the course of studies on the classification of these larvae. In addition, several valuable slides of Meloid larvae from North Africa, donated by Dr. A. Cros, have been incorporated. Dr. E. A. Chapin has been active in expanding and rearranging the collections in various groups of Coleoptera and in participating in exchanges with other Coleopterists. In the course of this work he has rearranged the collection in the family Scarabaeidae for *Canthon* and allied genera, and several small genera, as *Ancistrosoma*, and has segregated the Central American species of *Phyllophaga* from the mixed collections of Coleoptera. In the Nitidulidae he has arranged the genus *Colopterus*, except for unidentified exotic material, and has done additional work in the genus *Carpophilus*. In the Cleridae he has continued the work of incorporating his personal collection into the Museum material. In the family Gyrinidae he has rearranged all specimens now in the Museum. In the Staphylinidae he has rearranged part of the Oxytelinae, all of the Oxyporinae, and all of the Megalopsidinae. In addition he has rearranged the genus *Paederus*. In the Haplipidae he has rearranged the entire collection, describing all new species which he has found. In the Coccinellidae he has completed the rearrangement of Chilocorinae, Pentiliinae, Platynaspinae, and Telsimiinae, and has made progress in rearranging the Hyperaspinae. By an arrangement made through the Bureau of Entomology all specimens of Rutelinae have been forwarded to

Dr. Fr. Ohaus of the Natural History Museum, Mainz, Germany, an international authority on the classification of this group, for identification. About two-thirds of the material has now been returned so that this work is progressing rapidly to completion. W. S. Fisher has rearranged several small groups of Coleoptera in connection with identification work and critical studies of collections from various regions.

In the Lepidoptera Mr. Busck has continued arrangement of the Microlepidoptera as working facilities and time have permitted, and has been able to make several valuable additions to the collections through contacts with various specialists in this country and abroad. Carl Heinrich has continued work on the American Phycitinae and has made marked progress in transferring, expanding, and rearranging in preliminary fashion the specimens of this subfamily. He has continued work on the alcoholic collection, consisting mostly of lepidopterous larvae, which is now in satisfactory condition. During the year Mr. Heinrich, through a personal trip to Brooklyn, N. Y., secured the Hulst types of species of the family Pyralidae. These were transferred to Washington on loan, but through a later arrangement were included as part of the Brooklyn Museum's permanent deposit in the United States National Museum of the collection of Lepidoptera. Doctor Schaus has been very active during the last year in rearranging and expanding the collections of Macrolepidoptera, particularly in the Old World Sterrhinae and the Old World and North American Saturniidae. Considerable preliminary work was done toward the arrangement of the Thyrididae and Geometridae. During the last quarter of the year most of Doctor Schaus's time has been taken with work on the collection of Lepidoptera of the Brooklyn Museum which was placed in the United States National Museum on permanent deposit. Dr. Schaus personally visited the Brooklyn Museum to bring to Washington by hand the types included in this collection and since the arrival of this collection has devoted practically all of his energies and those of his assistants to the work of caring for it.

During the year C. T. Greene has rearranged the Museum collection of immature stages of Diptera, and has incorporated much material which was accumulated while he was associated with the division of forest insects of the Bureau of Entomology, an important addition that brings this collection to an outstanding position. Dr. J. M. Aldrich has been continually occupied in rearranging and improving the collection of Diptera and in indexing the literature of this subject.

In the Hymenoptera Mr. Gahan has supervised the complete rearrangement of the collection of Chalcidoids. In this work all of the

trays have been labeled and very many overlooked types of earlier workers have been recognized, given type numbers, and placed properly in the collections. The various regional collections into which the Chalcidoids were formerly segregated have been transferred to trays, and will ultimately be incorporated in the general collection. Mr. Cushman has incorporated the Baker collection of Stephanidae in the general Museum collection. As many were paratypes of species described for C. F. Baker by E. A. Elliott in England, this transfer involved the entry and assignment of type numbers to the various species and the correct labeling of all the specimens. In addition he has reviewed and arranged the Ichneumonid genus *Odontomerus* and has organized the Museum specimens of the tribe Cryptini according to the scheme of classification of Schmiedeknecht. The North American specimens of *Ophion* have been tentatively sorted and arranged for critical study. Miss Sandhouse has transferred the North American bees of the genus *Andrena* from cork-lined drawers to trays, arranging the species alphabetically, since there is no complete published revision of the genus available on which to base other arrangement. In addition, Miss Sandhouse, through a visit to the Academy of Natural Sciences in Philadelphia, obtained the specimens gathered for study by Mr. Viereck from various sources in Washington, these belonging in part to the Museum and in part to other organizations and individuals. This material has been so arranged that it is available for further study or disposal. Through the Bureau of Entomology Dr. C. E. Mickel, of the University of Minnesota, worked on the collection of Mutillidae for two and one-half months in the summer of 1928, and made very satisfactory progress in sorting, identifying, and arranging according to the latest schemes of classification the collection in this group, placing this family in condition for further study or expansion. Through similar arrangement Dr. Leland H. Taylor, of the University of West Virginia, spent two and one-half months during the fiscal year working on the collection of Chrysididae, his work including rearrangement of the collection and critical studies of various genera of this family.

Mr. Caudell has continued rearrangement of the nearctic Orthopteroids and has progressed through the family Acrididae. In addition he has made some progress in rearranging the exotic species.

Dr. W. A. Ewing has reworked and incorporated most of the collection of ectoparasites which has been presented by Dr. E. A. Chapin and has supervised the transfer of the mites of the suborder Atracheata to standard containers as well as the addition of miscellaneous material.

Work on the Coccidae has continued as usual during the year.

Following the death of Harry K. Harring, custodian of rotatoria, which came during the year, Frank J. Myers, of Ventnor, N. J., a close associate and collaborator, has generously undertaken to overhaul and remount where necessary the entire series of slides of rotifers.

In the division of marine invertebrates the alcoholic collections are in good shape as a result of last year's work on them. The rearrangement of the study collections has progressed slowly. Considerable work was done in matching slides of types with the bottles containing the remainder of the type material in the Hargitt collection, and much was accomplished with the unidentified hydroids of this collection.

The efforts of the curator of the division of mollusks have been largely centered on the preparation and identification of the West Indian collections obtained in Cuba last year, those secured by C. R. Orcutt in Jamaica and those obtained from other collectors in Haiti and Santo Domingo. As only a small portion of this has been catalogued, it will take at least another year to complete it. Mr. Marshall has continued work on the Isaac Lea and the rest of the Naiades collection checking up and verifying types, and has about half completed it, this having been the main object of his research. The time of the preparator has been fully occupied with the material obtained from the West Indies. Mrs. Marguerite W. Poole was employed for two months to complete the intercalation of the Henderson collection in the East American marine series. Thomas S. Creighton, of Blue Ridge Summit, Pa., has placed the division under great obligation by voluntarily giving a great amount of time during the winter to the labeling and cataloguing of the Jamaican collections made by Mr. Orcutt.

In the division of echinoderms the present status of the collections is approximately the same as last year, minor changes and improvements having been made in transferring specimens to new containers and in other ways. It is gratifying to be able to report that the very large and important collection of Indo-Pacific basket-stars, sent many years ago to Prof. L. Döderlein for study, was returned during the year and reincorporated in our series.

In the main herbarium of the division of plants the rearrangement of the phanerogamic collections has been carried to completion with the shifting of specimens comprising the family Compositae, and the provision of the very many new genus species and covers incidentally required in equalizing the bundles of specimens. In certain groups there still exists congestion, but this can readily be remedied by providing extra cases in addition to new ones required for normal expansion due to the insertion of new material. In

general, working conditions in the herbarium are vastly improved by the recent erection of the steel balcony, the rearrangement made possible having provided much needed table space for the sorting of specimens, as well as relief from crowding. The provision of a considerable number of new cases is, however, important. Work upon the collections during the year has progressed much as usual, being largely concerned with the identification of material sent in for report or collected by members of the staff. The principal herbarium studies to be mentioned are those of Doctor Maxon on tropical ferns, of Mr. Killip upon the flora of the South American Andes (especially the families Passifloraceae and Urticaceae), of Mr. Leonard upon the flora of Hispaniola, of Mr. Morton on the family Solanaceae, and of Professor Hitchcock and Mrs. Chase upon the grasses. In addition, Dr. S. F. Blake, of the Bureau of Plant Industry, has identified, as heretofore, a large amount of material belonging to the Compositae and other families. In the type herbarium the segregation of type specimens of American phanerogams has been continued under Mr. Killip's direction, 15,268 types of new species and varieties having now been distinctively labeled, specially catalogued, and placed in separate covers. These comprise the so-called type herbarium, kept apart as a separate unit. Nearly 1,500 specimens were added to it during the year.

Good progress in mounting phanerogams and ferns has been made, a total of 29,729 sheets having been turned out for recording and incorporation in the herbarium. Of this number 24,712 were mounted by adhesive plaster and 5,015 sheets are glued specimens that were reinforced (strapped) by adhesive plaster, mostly under contract. There remain about 10,000 unmounted specimens, besides 2,000 that are glued but not yet reinforced. The C. G. Lloyd Mycological collection, which was received through the Smithsonian Institution late during the last preceding fiscal year, is maintained as a separate unit under supervision of the Bureau of Plant Industry. Under the direction of Dr. John A. Stevenson, who has been appointed custodian of the Lloyd Mycological collection, work of arrangement so that the collection may be of maximum usefulness to professional students of fungi has been prosecuted vigorously during the year. The herbarium material proper, consisting of 58,236 specimens, has been catalogued in Museum record books, according to regular procedure, and in addition nearly one-fourth of the specimens have been newly labeled, card catalogued, and placed in individual boxes preparatory to final arrangement. The card catalogue mentioned will include not only the usual data as to locality and collector, but references also to correspondence, published notes or illustrations, and photographs. Beside specimens

there are about 10,000 photographic negatives of fungi with prints as well as nearly 4,000 cuts of illustrations published by Mr. Lloyd in Mycological Notes, which have in large part been numbered in sequence and arranged. The collection includes also many microscopic slides and a wealth of miscellaneous mycological notes, record books, correspondence, and related matter which will prove an indispensable aid to a study of the specimens. It is hoped to carry to completion during the coming year the card cataloguing of the entire Lloyd herbarium and the arrangement of all materials in permanent form, so that they may be immediately available for consultation and study. The whole will be housed in steel cases for preservation.

The work of the taxidermists has already been referred to in so far as it relates to the exhibition series. In the shops, work has progressed much as usual, except that Mr. Perrygo was detailed to field duty in Haiti for about four months, and that the department lost the exceedingly efficient services of C. E. Mirguet, who died on February 29, 1929, after a prolonged illness. J. S. Warmbath was appointed temporarily as assistant taxidermist. The preparation of the skeleton of the adult sperm whale received from Japan has presented great difficulties, especially the cleaning and bleaching of the skull, but is progressing favorably. A duplicate cast made from the moonfish in the exhibition series, for the American Museum of Natural History, begun by Mr. Mirguet, was successfully completed by Mr. Brown, chief taxidermist.

RESEARCH BY MEMBERS OF THE STAFF

Research by the curator of mammals, Gerrit S. Miller, jr., has been directed chiefly toward the identification of material from caves and Indian deposits in Haiti and the Dominican Republic. The assistant curator, Remington Kellogg, since his appointment on August 2, 1928, has been occupied with arrangement of the large collections of photographs, pamphlets, and similar records belonging to the division. A complete set of the Concilium Bibliographicum cards was filed. In addition, time was devoted toward the completion of a report for the Museum on the tailless amphibians of Mexico, begun before taking his present position, which it was desired to finish promptly. A. Brazier Howell, collaborator, has continued studies of the adaptation of mammals for aquatic life, and of the Chinese and related Asiatic mammals in the Museum collection. Dr. C. Hart Merriam, associate in zoology, has continued work on the bears, and has published two papers on the subject.

Robert Ridgway, curator of birds, worked steadily on his account of the Birds of North and Middle America up to his death on

March 25, 1929. At that time he was engaged on the petrels. All manuscript, memoranda, outline drawings, and other papers bearing on this work were returned to the Museum early in April. The associate curator, Charles W. Richmond, engaged in researches that were calculated to benefit and improve the office records. He made considerable progress in identifying entries of the United States Exploring Expedition specimens, scattered throughout the catalogue, and in reconstructing a list of the birds of that expedition. The specimens from this expedition were catalogued at the same time as those of the United States Astronomical Expedition, and entries of the two collections being freely intermingled, often with no clear indication of the source of individual specimens. As both expeditions visited Chile, the specimens from that country were particularly involved. A large proportion of the entries was verified and made clear. Clues to possible types were investigated, and two type specimens were discovered in the general collection. He also spent considerable time on proof of Bent's Life Histories of North American Shore Birds, part 2, and on the proof of the Ten-Year Index to the Auk, and gave some attention to the manuscript of the forthcoming A. O. U. Check-List of North American Birds. The assistant curator, J. H. Riley, finished a paper on the birds collected in inner Mongolia and Kansu by F. R. Wulsin, identified Chinese birds received from Dr. D. C. Graham, made provisional determinations of birds collected in northern Siam by Dr. Hugh M. Smith, and described those considered to be new. Dr. A. Wetmore continued work on the birds of Hispaniola, made determinations of fossil bird bones from Florida and elsewhere, and carried on other similar researches.

In the division of reptiles, the curator, L. Stejneger, has devoted considerable time to revising his manuscripts on Chinese reptiles and amphibians necessary through the receipt of much additional material from Doctor Graham and other sources. The work on the North American turtles has progressed slowly, being held up by lack of material from certain critical localities. Miss Cochran's survey of the herpetology of Haiti is nearing completion.

Research by members of the staff of the division of fishes has been pursued upon material from the following localities during the present year: Fishes from the Philippine Islands, with reports upon certain groups; a large collection from the vicinity of Shanghai, and several lots from Szechuan Province, China; small lots from South America, Costa Rica, Haiti, Porto Rico, Florida, Louisiana, California, the Hawaiian Islands, and Alaska.

In the division of insects the associate curator, J. M. Aldrich, continued study of the types of American muscoid flies in the

Vienna Museum, and published an additional paper on the subject, besides several others on special groups of diptera. In the section of Coleoptera, H. S. Barber continued work on the weevils of the genus *Trichobaris*, and on fireflies belonging to the genus *Photuris;* on the Chrysomelid genera *Colaspis*, *Paria*, and *Chlamys;* and on the Carabid genus *Rhadine*. Dr. A. Böving investigated the larvae of the superfamilies Dryopoidea and Dascilloidea, this work being completed and published. He undertook critical studies of the larvae of two species of *Pissodes* and of the larvae of the families Hydrophilidae and Histeridae. In addition he continued study of larvae of the Chrysomelid subfamily Halticinae. Work was completed and papers published on larvae of two species of Cleridae, on the larvae of the Chrysomelid subfamily Galerucinae, and a mimeograph paper prepared on the identification of larvae related to the Japanese beetle was issued by the Department of Agriculture. His most important work during the year was embodied in a paper on the classification of beetles according to larval characters, which was presented before the Fourth International Congress of Entomology at Ithaca, N. Y. Doctor Chapin's research work has been confined to the description of certain new species in the Haliplidae and to a continuation of critical studies in several families, notably in the Coccinellidae and the Scarabaeidae. W. S. Fisher completed a critical monograph on the classification of the genus *Agrilus*. He has continued studies on the various collections of beetles submitted for identification, and a manuscript on Buprestidae from the Federated Malay States has been completed and submitted for publication.

In Lepidoptera, A. Busck has completed work on a revision of the Torticidae occurring in the United States. C. Heinrich began critical work on a revision of the American Phycitinae, and will continue this during the coming year. W. Schaus prepared a monograph of the lepidopterous family Mimallonidae and a monograph of the Bombycid subfamily Epiinae.

In the order of Diptera, C. T. Greene made progress in studies of the immature stages of the family Agromyzidae, in studies of a group of Tachinid flies distinguished by possession of an evanescent fourth vein, and has investigated a new Cecidomyiid affecting pine in Cuba.

In Hymenoptera, A. B. Gahan has undertaken the critical revision of the economically important Chalcid genus *Trichogramma*, and has practically completed work in connection with it. R. A. Cushman has revised the oriental Braconid genus *Odontofornicia* and has submitted for publication a paper covering this work. It is of interest that the National Museum collection now contains every species of the genus now known. Mr. Cushman has revised the

North American species of the Ichneumonid genus *Odontomerus*, where again the Museum collection contains a very large representation of the known species. Mr. Cushman has also made a number of miscellaneous studies in connection with identification work, resulting in the preparation of two other papers describing new species and giving various notes in regard to already described species and genera. Miss Grace Sandhouse has continued studies of the bee genera *Augochlora*, *Osmia*, and *Agapostemon*.

In Orthoptera, A. N. Caudell has been chiefly occupied with identifications, arrangement of the collection, and cataloguing work. Dr. H. E. Ewing has continued systematic work on the chiggers and has described several new species during the year. He has prepared a paper on the rare spiders belonging to the group Ricinulei, and is at present engaged on a critical revision of the so-called feather mites which will be a joint contribution with Dr. W. R. Thompson, of the Farnham Royal Parasite Laboratory, who began work on the group many years ago.

In the division of marine invertebrates Dr. Mary J. Rathbun brought to a conclusion the third of her monographic bulletins on American crabs, a monumental piece of work that has required a number of years of most intensive study. Its completion marks another great advance in progress in connection with the large and valuable carcinological collections of the Museum. Miss Rathbun has also completed a paper dealing with the Decapods of the Canadian Atlantic fauna, which was published by the Biological Board of Canada, and another manuscript entitled "New and Rare Chinese Crabs," in which are described a new subfamily, two new genera, eight new species, and five subspecies. She has made a very considerable number of routine identifications of Brachyura and has continued studies on fossil crustacea. The curator, Waldo L. Schmitt, has given the greater part of his time to past and present accumulations of routine. He prepared one manuscript during the year on Chinese Stomatopods, collected by Dr. S. F. Light, now in the hands of the printer. The comprehensive report by Clarence R. Shoemaker, assistant curator, on the Amphipods of the Choticamp Expedition (Biological Board of Canada) is complete except for certain of the illustrations. Mr. Shoemaker has also finished a report on the Amphipods taken in the Bay of Fundy, Minas Basin, and Shubenacadie River, Nova Scotia, by the Atlantic Biological Station of Canada. These two papers represent the first intensive studies made upon the amphipod crustaceans of these regions. J. O. Maloney, aid, has continued studies on Lower California isopods. Dr. J. A. Cushman, honorary collaborator in Foraminifera, is now engaged in the preparation of part 8, the concluding section, of his series of bulletins monographing the Atlantic Foraminifera. Dr.

Max Ellis, Dr. Maynard M. Metcalf, and Dr. William H. Longley, collaborators in this division, have continued work upon the discodrilid worms, the opalinid parasites of frogs, and the collections from the Dutch East Indies, respectively. R. S. Bassler, curator of invertebrate palaeontology, has continued oversight over the collections of Bryozoa, including routine identifications with review of the study series of these forms in collaboration with Ferdinand Canu.

The curator of mollusks, Paul Bartsch, has continued studies on West Indian land shells and west American Turritidae. Some time was given to work on a manual of Hawaiian marine mollusks, begun by Doctor Dall. The time of the assistant curator, William B. Marshall, has been largely required for routine determination of material sent to the Museum for identification, which has resulted in the publication of several papers noted beyond in the bibliography. In addition he has continued investigations on the fresh-water mussel collection of the Museum.

The curator of Echinoderms, Austin H. Clark, completed study of a large collection of Comatulids, including 905 specimens, representing 116 species, assembled by Dr. Th. Mortensen in the Indo-Pacific region, chiefly at the Kei Islands. Determinations were also made of two lots of Comatulids, one from Chile and one from the vicinity of Hong Kong, submitted by the British Museum. Work on the crinoids collected by the Australasian Antarctic Expedition, 1910–1914, under the leadership of Sir Douglas Mawson, was continued. The preparation of volume 2 of bulletin 82 was continued. This work consisted chiefly in incorporating in the manuscript the data from Doctor Mortensen's Indo-Pacific collection.

Dr. Frederick V. Coville, honorary curator of the division of plants, continued studies on the breeding and culture of blueberries (*Vaccinium*) and other economic acid-soil plants. Dr. William R. Maxon, associate curator, spent about three months in the summer of 1928 in examining tropical American fern material in European herbaria, and has continued work in this subject since his return as opportunity permitted. Several short papers have been published. Ellsworth P. Killip, associate curator, has continued studies of the Andean flora of South America and has published several papers describing new species from that region. He has finished a monograph upon the American species of Passifloraceae. E. C. Leonard, assistant curator, has continued studies of West Indian plants, particularly those of Hispaniola, and has engaged in an examination of certain genera of Acanthaceae as represented in America. C. V. Morton, aide, has undertaken a critical study of several tropical American genera of the families Solanaceae and Malphighiaceae.

Egbert H. Walker, aide, has begun the preparation of a botanical bibliography of eastern Asia.

RESEARCH OF OUTSIDE INVESTIGATORS AIDED BY MUSEUM MATERIAL

The more important loans of specimens made to outside investigators from the division of mammals were as follows: To the Johns Hopkins Medical School for Dr. William L. Straus, 2 skeletons of lemurs and 2 of anthropoid apes; for Dr. A. H. Schultz, 5 anthropoid skeletons; for Dr. E. Huber, 2 monkeys and 2 duckbills in alcohol; for A. B. Howell, various bones and 2 mammals in alcohol; to the Museum of Comparative Zoölogy, Cambridge, Mass., for study by H. J. Coolidge, 29 gorilla skulls; to the Boston Society of Natural History for Francis Harper, 16 mice; to the Carnegie Institution of Washington for H. D. Senior, part of a duckbill skeleton; and to the University of Michigan for study of Arthur Svihla, 16 small mammals. Throughout the year the mammal collection has been frequently consulted by Dr. A. H. Schultz, Dr. E. Huber, and Dr. W. L. Straus, jr., of Johns Hopkins Medical School. The Biological Survey staff have had access at all times to the collection in connection with their work on North American mammals. Dr. O. P. Hay, of the Carnegie Institution of Washington, has used the material in the division throughout the year in connection with his work on fossil mammals. Dr. J. M. Wainwright, Scranton, Pa., has made further examination of certain mammals in a study of mammary glands. Dr. E. V. Cook, Cleveland Museum of Natural History, spent a short time in the examination of specimens of wild pig skulls from Borneo. Dr. W. M. Krogman, of Western Reserve University, Cleveland, Ohio, spent a week in the division making a study of gorilla skulls.

Among outside investigators who made use of the bird collections and library were the following: Mrs. Mary E. McLellan Davidson, California Academy of Sciences, San Francisco, for 10 days examined material and literature relating to the Procellariiformes (petrels); Dr. R. M. Strong, Chicago, for a week examined literature in connection with preparation of a bibliography; A. C. Bent, Taunton, Mass., examined various native birds and eggs, chiefly in connection with his work on the life histories of North American birds; George Finlay Simmons, Cleveland Museum of Natural History, consulted the collections on several occasions in studies of material collected on the voyage of the *Blossom* to the South Atlantic; W. W. Bowen, consulted specimens and literature relating to the birds of Sudan; G. L. Austin, jr., Tuckahoe, N. Y., spent several days investigating Labrador birds and records; Bruce Horsfall was engaged for several days in making colored drawings of birds for the American Nature

Magazine. Others who examined material on shorter visits included Dr. J. J. Murray, Lexington, Va., on juncos and chickadees of his State; Dr. R. H. Palmer, Lansing, Mich., on certain Mexican and South American species; Dr. Thomas Barbour, director of the Museum of Comparative Zoölogy, on West Indian burrowing owls; Edward J. Court, of Washington, on clapper rails; C. Boden Kloss, director of the Federated Malay States Museums of Singapore, on certain Malayan birds; H. W. Hubbard, Peking, China, on Chinese birds; Miss Jeannette Speiden, Silver Spring, Md., on Chinese birds; Charles E. Underdown, Academy of Natural Sciences, Philadelphia, on various birds; C. H. Popenoe, Silver Springs, Md., on various species of parrots; P. A. Taverner and Hoyes Lloyd, Ottawa, Canada, on certain Canadian and other species; Prof. Stuart T. Danforth, Mayaguez, P. R., on West Indian blackbirds of the genus *Agelaius;* Capt. Karl Squires, Fort Humphrey, Va., Mr. George Jackson, Augusta, Ga., and Wilson C. Hanna, Colton, Calif., on various North American eggs. Members of the Biological Survey staff interested in various projects, who made use of the collection included A. H. Howell, who continued researches on the birds of Florida and Georgia; Dr. E. W. Nelson, who studied Mexican grosbeaks and paroquets; Dr. H. C. Oberholser, who consulted various specimens concerned with identifications of skins transmitted to the Biological Survey for determination; E. A. Preble, who looked up various specimens and references; F. C. Lincoln, who examined material and records concerning the distribution and migration of North American birds; and Miss M. T. Cooke, who examined various specimens and records of local species. Ornithologists who benefited the Museum by the determination of material included Dr. Herbert Friedmann, who named several hundred specimens of African birds, chiefly from the Frick collection; Dr. C. E. Hellmayr, who revised or confirmed identifications of certain central Asian species; and Dr. H. C. Oberholser, who identified various Malay and North American birds.

Loans amounted to 1,499 specimens, in 45 lots, the more important being the following: To the Academy of Natural Sciences, Philadelphia, 18 skins of a cuckoo (*Hyetornis*) from Hispaniola, for the use of James Bond, and 12 skins from Siam and China for R. M. DeSchauensee; to the American Museum of Natural History, New York, 3 skins of Polynesian warblers (*Conopoderas*), for Dr. R. C. Murphy; to the British Museum (Natural History), London, England, 2 skins of a Malayan warbler (*Acanthopneuste klossi*) and 1 of an ice petrel (*Pagodroma candida*), for N. B. Kinnear, and 1 skin of a francolin (*Francolinus fricki*), for Dr. W. L. Sclater; to the Bruce Museum, Greenwich, Conn., 15 birds from Dominica, West Indies, for Paul G. Howes; to the California Academy of Sciences,

San Francisco, 1 skin of a petrel (*Oceanodroma macrodactyla*) for Mrs. Mary E. McLellan Davidson and 2 skins of Galapagos ground finches (*Geospiza*) for Harry S. Swarth; to the California Institute of Technology, Pasadena, 8 skins of a hummingbird (*Oreopyra viridipallens*) for Donald R. Dickey; to the Carnegie Museum, Pittsburgh, Pa., 31 skins of chickadees (*Penthestes*, various species) and 18 skins of *Pachysylvia*, for W. E. Clyde Todd; to the Cleveland Museum of Natural History, Ohio, 5 skins of forms of the peregrine falcon for George Finlay Simmons; to the Field Museum of Natural History, Chicago, 10 birds from Kashmir and Chile, 47 skins from Kashmir and Turkestan, 4 skins of a warbler (*Sylvia curruca affinis*), and 18 skins of a chat (*Oenanthe oreophila*) for Dr. C. E. Hellmayr, and 6 skins of *Francolinus* and the type of *F. fricki*, 1 skin of a praticole (*Glareola ocularis*), and 2 skins of a snipe (*Capella hardwickii*), for H. B. Conover, to J. Eugene Law, Altadena, Calif., 19 skins of various species of grackles (*Holoquiscalus*); to George Mason, London, England, 2 skins of 2 species of fruit pigeons; to the Museum of Comparative Zoölogy, Cambridge, Mass., 12 lots numbering 1,211 skins of African birds, mostly from the Frick collection, for Dr. Herbert Friedmann, 9 skins of wrens (*Heleodytes capistratus*), for James L. Peters, 18 skins of woodpeckers (*Picus canus sordidior*), and 5 skins of small bitterns (*Ixobrychus involucris*) for Outram Bangs; to the State College of Washington, Pullman, 1 specimen of a rosy finch (*Leucosticte littoralis*) for Prof. Dana J. Leffingwell.

In the division of reptiles, E. R. Dunn, A. H. Wright, G. E. Noble, Afranio do Amaral, C. E. Burt, Percy Viosca, jr., and Miss O. G. Stull have spent varying amounts of time studying the collections. Specimens were loaned to a number of institutions and specialists outside of Washington, the most important being as follows: Museum of Comparative Zoölogy, Cambridge, Mass., 1,694 reptiles and amphibians for Dr. Thomas Barbour and A. Loveridge; L. M. Klauber, San Diego, Calif., 81 snakes; C. D. Bunker, University of Kansas, 11 turtles; Zoological Museum of the University of Michigan, 1,293 reptiles and amphibians for Dr. A. Ruthven, Miss O. G. Stull, C. E. Burt, and Mrs. H. T. Gage; Dr. Malcolm Smith, London, England, 18 reptiles and amphibians in connection with his study of the herpetology of Siam; Dr. A. W. Wright, Cornell University, 331 adult frogs and tadpoles in furtherance of his researches into North American species.

The following investigators worked in the division of fishes; Dr. R. V. Truitt and class, University of Maryland, College Park; Walter Hinton, National Geographic Society, Washington, D. C., who examined certain specimens from New York State; Carl L.

Hubbs, University of Michigan, Ann Arbor, who examined freshwater fishes from the Eastern and Southern States; S. F. Hildebrand, Marine Biological Laboratory, Beaufort, N. C., who examined Cichlids in connection with matter from the laboratory at Beaufort; A. E. Parr, of the Bingham Oceanographic Collections, Yale University, who examined Scopelids in connection with work upon this group of deep-sea fishes. Assistance was also rendered Mr. Parr in the comparison of certain eels. Percy Viosca, jr., department of conservation of the State of Louisiana, New Orleans, examined Micropterids in connection with an investigation of the black basses of Louisiana and neighboring States. In addition to four barrels of Philippine fishes shipped to H. W. Fowler, of the Philadelphia Academy of Sciences, to be reported on in the bulletin on the fishes collected by the *Albatross*, there have been loaned 15 specimens to J. H. Norman, British Museum (Natural History), London; 6 specimens to Dr. William Beebe, Zoological Society, New York; and 2 specimens to John R. Greeley, Cornell University, Ithaca, N. Y.

Entomological material for study purposes to the extent of 8,288 specimens was loaned to 33 institutions and investigators. Among those to whom large consignments were sent may be mentioned the following: Academy of Natural Sciences, Philadelphia, 86 roaches and flies; Dr. H. W. Allen, Moorestown, N. J., 424 wasps; H. G. Barber, Roselle, N. J., 197 Hemiptera; Dr. J. Bequaert, Boston, Mass., 499 wasps and flies; British Museum (Natural History), London, 136 bees and flies; F. M. Carpenter, Boston, Mass., 125 miscellaneous insects; David G. Hall, Lawrence, Kans., 73 flies; Dr. H. M. Harris, Ames, Iowa, 185 Hemiptera; Dr. W. Horn, Berlin, Germany, 188 beetles; Dr. H. C. Huckett, Riverhead, N. Y., 383 flies; C. E. Mickel, St. Paul, Minn., 617 wasps; Dr. J. G. Needham, Cornell University, 967 dragonflies; Dr. F. Ohaus, Mainz, Germany, 3,106 beetles; V. S. L. Pate, Ithaca, N. Y., 87 wasps; H. H. Ross, Urbana, Ill., 558 sawflies; and the Zoological Museum of the Academy of Sciences, Leningrad, 124 miscellaneous insects.

Numerous workers visiting the division of insects during the year for the purpose of studying the collections or gaining assistance from the various specialists were: Dr. H. W. Allen, Japanese beetle laboratory, Moorestown, N. J., spent about 10 days in the study of *Tiphia*. Prof. James G. Needham, Cornell University, Ithaca, N. Y., spent a week at the Museum studying the collection of dragonflies (Odonata), and borrowed material to finish his critical study of this group. Dr. W. A. Hoffman, School of Tropical Medicine, San Juan, P. R., studied blood-sucking flies. Prof. G. C. Crampton,

Massachusetts Agricultural College, Amherst, examined specimens in connection with his investigations in insect morphology. Ray T. Webber, gypsy-moth laboratory, Melrose Highlands, Mass., and W. H. Thorpe, Zoological Laboratory, Cambridge, England, examined Diptera. Dr. Joseph Bequaert, School of Tropical Medicine, Boston, Mass., examined Diptera and Hymenoptera. Among entomologists from the Fourth International Congress at Ithaca who examined the collections may be mentioned Leif R. Natvig, curator in the Zoological Museum, the Royal Frederick University, Oslo, Norway; Dr. Walther Horn, of Berlin (who remained about three weeks); and Baron Von Rosen, of the Museum at Munich.

W. J. Showalter was rendered assistance in connection with 16 colored plates for his article, "Insect Rivals of the Rainbow," which appeared in the July, 1929, number of the National Geographic Magazine, photographs being taken from insects spread for this purpose at the Museum. At the present time H. G. Hallock is engaged in a revision of the parasitic flies of the genus *Cryptomeigenia*, based on Museum material, and David G. Hall, of Coachilla Valley, Riverside County, Calif., is working on South American Sarcophagidae.

The division of marine invertebrates is fortunate in having established a system of mutual assistance in research work with outside specialists who on the one hand are helped in their investigations by examination of Museum material, while on the other the Museum benefits by having material identified. The assistance of the following specialists in handling during the year about 500 specimens has been highly appreciated: Dr. Henry B. Bigelow, Medusae, Ctenophora; Dr. H. Boschma, Rhinocephalids (Crustacea); Dr. Wesley L. Coe, Nemerteans; M. W. de Laubenfels, Porifera; Prof. G. S. Dodds, fresh-water Entomostraca; Dr. Walter K. Fisher, Sipunculids; Dr. C. McLean Fraser, Hydroids; Prof. Gordon E. Gates, earthworms; Dr. W. P. Hay, Crustacea; Dr. A. G. Huntsman, Ascidians; Dr. Libbie Hyman, Turbellaria (flatworms); Dr. Chauncey Juday, Cladocera (Crustacea); T. Kaburski, Turbellaria; Dr. C. Dwight Marsh, fresh-water Copepods; Dr. Maynard M. Metcalf, *Salpa*, *Pyrosoma*, Protozoa; Dr. J. Percy Moore, leeches; Frank J. Myers, Rotatoria; Dr. Yo Okada, Phyllopoda; Dr. Raymond C. Osburn, Bryozoa; Dr. A. S. Pearse, Limnadia; Dr. Henry A. Pilsbry, barnacles; Capt. F. A. Potts, Rhizocephalids (Crustacea); Prof. Frank Smith, earthworms and fresh-water sponges; Miss Caroline E. Stringer, Turbellaria; Dr. W. M. Tattersall, Mysidacea (Crustacea); Dr. A. L. Treadwell, Annelids; Dr. C. B. Wilson, parasitic and free-swimming marine Copepods; Dr. H. V. Wilson, Porifera.

In addition to those listed above, a number of nonresident investigators have been assisted in researches by loan of specimens, as follows: Miss Bella A. Stevens, department of zoology, University of Washington, Seattle, 11 specimens of *Callianassa* in the furtherance of studies on west-coast Crustacea; Dr. Carl Zimmer, Zoological Museum, University of Berlin, German, 838 specimens of *Diastylis* for studies on the Cumacea; E. W. Bennett, lecturer in biology, University of Western Australia, Perth, 118 specimens of crabs for study in connection with a monographic revision of the family Hymenocracinidae; Dr. Henry B. Bigelow, Museum of Comparative Zoölogy, 72 specimens of Epphausiids for study in connection with biological investigations in the Gulf of Maine; Charles J. Shen, Fan Memorial Institute of Biology, Peking, China, 3 specimens of *Asellus* for examination in connection with a study of the terrestrial Isopods of China; Miss Isabella Gordon, British Museum (Natural History), London, England, one specimen of *Lamunida picta* for examination in connection with studies on Atlantic Galathoidae; Edward J. Matthews, Johns Hopkins University, Baltimore, 7 lots of bottom samples in connection with a search for certain rare minerals supposedly of meteoric origin.

Bron Chuay Inframbarya and Subhajaya Vanijvadham, of Bangkok, Siam, spent several months in gaining familiarity with the classification of Crustacea in general and oriental representatives of the group in particular. Phil Powers, Rice Institute, Houston, Tex., devoted the better part of a week to the examination of New England annelids in connection with studies in cooperation with William Procter, of the Biological Survey, Mount Desert Island. Dr. Robert E. Coker, University of North Carolina, on two occasions spent several days consulting literature dealing with fresh-water Crustacea. Kenneth L. Hobbs, George Washington University, was occupied for several days a week in our laboratories for a period of four months in identifying and preparing a report upon a collection of Crustacea made at the Puget Sound marine biological station of the University of Washington at Friday Harbor. He also devoted some time to a taxonomic study of certain phyllopod Crustacea. Dr. D. K. Palmer, University of Washington, spent two days in the division consulting the collections of fossil Crustacea and in studying the anatomy of the horseshoe crab.

Among other visitors and specialists who have availed themselves of the collections in the division are the following: H. A. Raider, Shanghai, China, Crustacea; Dr. Albert Mann, Carnegie Institution of Washington, D. C., marine deposits; Dr. Carl Zimmer, director of the Zoological Museum, University of Berlin, Germany, Crustacea;

Herbert N. Lowe, Long Beach, Calif., Crustacea; Dr. W. Hay, Washington, D. C., Crustacea; W. S. Cole, Cornell University, Foraminifera; Gifford Pinchot, Washington, D. C., marine invertebrates; Dr. Belle A. Stevens, Seattle, Wash., Crustacea; Dr. A. E. Parr, Peabody Museum, New Haven, Conn., marine invertebrates; Dr. Walter K. Fisher, Stanford University, marine collections; Prof. A. N. Derjavin, Vladivostok, Crustacea; Dr. J. A. Cushman, Sharon, Mass., Foraminifera; Dr. W. W. Alpatov, University of Moscow, Crustacea; Dr. A. A. Pearse, Duke University, Crustacea; Dr. C. Dwight Marsh, United States Department of Agriculture, Crustacea (Copepods); Dr. E. W. Berry, Johns Hopkins University, marine deposits; Dr. H. B. Bigelow, Museum of Comparative Zoölogy, oceanography; Dr. J. P. Galtstoff, United States Bureau of Fisheries, Crustacea.

In the division of mollusks Dr. Bernard Smith, of New York State Museum, spent three weeks examining embryonic shell characters of mollusks belonging to the genus *Conus*, in search for characters that may throw light upon their phylogeny. Miss Pearl Hicks spent a great deal of time in the Museum upon a study of the anatomy of 100 hybrid Cerions. Miss Karla L. Heurich has almost completed a biometric study of the very variable *Vivipara lanaonis* collected by the curator in Lake Lanao, Mindanao, checking the embryo shells against the parent. The collections have also been consulted by Drs. Wendell C. Mansfield, C. Wythe Cooke, and Julia Gardner, members of the Geological Survey staff, who have had constant use of specimens for comparative purposes.

The following individuals have spent some time in the division examining and studying material: Dr. F. Krantz, Bonn, Germany; Le Roy Topping, Honolulu, Hawaii; Dr. F. M. MacFarland, Stanford University; Horace G. Richards, University of Pennsylvania; Dr. I. F. Moll, Berlin, Germany; Dr. Demetrius Sinitsin, Bureau of Animal Industry; Gerrit Bevelander, Johns Hopkins University; C. B. Pratt, Miami, Fla.; N. W. Lermond, Rockland, Me.; Dr. and Mrs. C. L. Fenton, Cincinnati, Ohio; Maxwell Smith, Palm Beach, Fla.; and Dr. Robert E. Coker, Chapel Hill, N. C. Specimens were loaned for study to the following specialists: Dr. Guy C. Robson, British Museum (Natural History), London; W. S. Wright, San Diego Society of Natural History; Dr. Bruce L. Clark, University of California; and Miss Anne Morgan, Mount Holyoke College.

During the year in the division of Echinoderms, Prof. Walter K. Fisher, director of the Hopkins marine laboratory, worked on the starfish collection, studying especially the species inhabiting the North Pacific area. Dr. Th. Mortensen, of the Zoological Museum,

Copenhagen, Denmark, continued work on the sea urchins collected by the *Albatross* among the Philippines and in adjacent waters. Miss Elizabeth Deichmann is continuing the work begun by Dr. Hubert Lyman Clark, of the Museum of Comparative Zoölogy, on the holothurians of the *Albatross* Philippine expedition.

In the division of plants the cooperative studies of the leguminous families Caesalpiniaceae and Mimosaceae undertaken by Dr. J. N. Rose and Dr. N. L. Britton have been continued by Doctor Britton since the death of Doctor Rose in May, 1928. Two papers concluding the studies of Mimosaceae in North America have been published and work is nearly completed upon the first portion of the Caesalpiniaceae.

As in former years, much help has been extended to outside students by the loan of specimens from the National Herbarium. Locally, 41 lots of material, aggregating 763 specimens, have been lent to investigators in the Bureau of Plant Industry. In addition, a considerable number of Compositae were examined in the herbarium by Dr. S. F. Blake, of the bureau staff, in connection with current studies of that family. Out-of-town botanists who have conducted studies at the herbarium, and the special subjects investigated, are as follows: Dr. A. Gunderson, Brooklyn Botanic Garden, the genus *Frankenia;* Prof. R. M. Jennison, University of Tennessee, flora of Tennessee; Prof. Aven Nelson, University of Wyoming, flora of the Rocky Mountains; Miss Mildred Mathias, Missouri Botanical Garden, family Umbelliferae; Prof. Morton E. Peck, Willamette University, Salem, Oreg., flora of Oregon; A. E. Porsild, of the Canadian National Herbarium, flora of Arctic Canada and adjacent parts of Alaska; Felipe H. Salvosa, Bureau of Forestry, Manila, the genus *Rhizophora;* Dr. E. E. Sherff, Field Museum of Natural History, *Bidens*, and related genera; Dr. J. K. Small, New York Botanical Garden, flora of southeastern United States; Albert E. Smith, New York Botanical Garden, flora of Colombia and Ecuador; G. Ledyard Stebbins, jr., Gray Herbarium, grasses; Dr. T. Tanaka, Taihoku Imperial University, citrus and related genera; Dr. Norman Taylor, Brooklyn Botanic Garden, grasses; C. A. Weatherby, Gray Herbarium, ferns.

Material loaned for study to institutions or to individuals outside of Washington during the year consisted of 102 lots aggregating 9,577 specimens, the most important sendings being as follows: Botanisches Museum, Berlin-Dahlem, Germany, 677 specimens of plants; B. F. Bush, Courtney, Missouri, 147 specimens of *Tilia*; University of California, Berkeley, Calif., 880 specimens of ferns; University of California at Los Angeles, 246 specimens of *Labiatae*; Universitetets Botaniske Museum, Copenhagen, Denmark, 122 specimens; Field Museum of Natural History, Chicago, 3,278 speci-

mens; Prof. Hugo Glück, Heidelberg, Germany, 110 plants; Gray Herbarium of Harvard University, 829 specimens; University of Illinois, Urbana, 86 specimens of Piperaceae; the Missouri Botanical Garden, St. Louis, 654 specimens; the New York Botanical Garden, 652 specimens; New York State Agricultural Experiment Station, Geneva, N. Y., 227 specimens; College of the Pacific, Stockton, Calif., 259 specimens of *Polygonum;* Academy of Natural Sciences, Philadelphia, 205 specimens; Pomona College, Claremont, Calif., 720 specimens; Botanic Institute of Charles University, Prague, Czechoslovakia, 145 specimens of *Pityrogramma.*

ASSISTANCE BY MEMBERS OF STAFF TO OTHER GOVERNMENT BUREAUS AND PRIVATE INDIVIDUALS

Assistance of this kind usually takes the form of identification of specimens, looking up literature, verifying quotations, discussions of moot points in taxonomy and nomenclature, answering questions as to habits of animals, or where and how to obtain specimens. Requests occasionally are received for the complete natural history as well as detailed bibliographies of certain species or even groups. Considerable help is given to the students and staffs of educational and kindred institutions with regard to research and thesis work. The number of specimens thus handled and inquiries answered runs into many thousands each year. All are given careful consideration and the assistance rendered may in many cases involve protracted research.

Detailed reports were made by the curator of the division of mammals on a total of 38 lots comprising about 98 specimens. Besides attending to the usual miscellaneous inquiries, he gave considerable assistance to Dr. C. W. Stiles, Hygienic Laboratory, United States Public Health Service, in bibliographic work on the primates and bats.

Assistance of various kinds, chiefly bibliographical, was rendered in the division of birds on numerous occasions to members of the Biological Survey to facilitate their investigations. As in previous years, the authorities of the National Zoological Park were provided with identifications of specimens, correction of technical names, and other information. Opinion was given on plumage submitted by officials of the Customs Bureau of the United States Treasury. Sixteen lots of specimens, including four lots of feathers and downs, were received for identification during the year. Assistance was given the Cleveland Museum of Natural History in arranging for photostat copies of certain pages in thirty or more books and periodicals dealing with ornithology. Some assistance was also rendered private individuals and officials interested in naval aircraft work, who desired information concerning the struc-

ture of feathers. For the benefit of the same parties, Dr. A. Wetmore exhibited moving picture films of birds in flight.

Forty-five lots of material received for examination and report were handled in the division of reptiles and batrachians. The Government bureaus mostly concerned were the Federal Horticultural Board and the Biological Survey.

In the division of fishes, assistance was rendered the United States Bureau of Fisheries, Dr. David Starr Jordan, Stanford University, and other institutions and individuals, as well as those seeking answers to questions relating to fishes. Twenty-two lots of fishes were received for examination and report.

Most of the identification work comes to the division of insects from the different branches of the Department of Agriculture, from State experiment stations and individual entomologists. Over 200 shipments of specimens were received for the purpose of identification and were distributed to the various specialists for determination.

Among those who have sent shipments to the Museum for identification may be mentioned: Prof. M. Valerio, San Jose, Costa Rica; Manuel Perez Torres, San German, P. R.; Dr. F. Felippone, Montevideo, Uruguay; D. S. Bullock, Angol, Chili; C. R. Orcutt, Kingston, Jamaica; Rev. Sebastian Gates, Grenada, British West Indies; A. P. Jacot, Tsinan, China; Gerald F. Hill, East Melbourne, Australia; S. Calderon, San Salvador, Central America; Dr. G. Russo, Moca, Dominican Republic; G. A. Mavromoustakis, Cyprus; C. F. Wu, Peking, China; Anastasio Alfaro, San Jose, Costa Rica; E. H. Bryan, jr., Bishop Museum, Honolulu, Hawaii; Heinrich Schmidt, San Jose, Costa Rica; Dr. N. Gist Gee, Peking, China; R. H. S. Laboratory (G. Fox Wilson), Surrey, England; J. E. Collin, Newmarket, England; Fabian Ortiz, Guatemala; Stuart T. Danforth, University of Porto Rico; Dr. H. Pittier, Caracas, Venezuela; Harold Box, Tucuman, Argentina; Prof. F. Campos R. Guayaquil, Ecuador; G. E. Gates, Judson College, Rangoon, Burma; Dr. F. H. Baker, Richmond, Australia.

In the division of marine invertebrates, 148 separate transactions relating to identification of material received for identification and report were recorded during the year. Many of these came from Government agencies or institutions in the United States, as the Bureau of Fisheries; plant quarantine and control administration, Department of Agriculture; State Plant Board of Mississippi; agricultural experiment station, Bozeman, Mont.; Florida State Museum; as well as the Bernice P. Bishop Museum, Honolulu. Similar agencies and institutions abroad included the Biological Board of Canada; agricultural experiment station, Paramaribo, Surinam; Public Library, Museum, and Art Gallery of South Australia; and

the National Museum of Costa Rica. A large amount of information in the form of identification and pertinent references to literature was furnished to students and staff of 18 universities and colleges, in addition to numerous private individuals.

In the division of mollusks, 34 lots of material were identified and returned and numerous snails and slugs were named for the plant quarantine and control administration to determine whether these organisms, imported with plants, were of kinds injurious to horticulture. In February, at the request of the United States Shipping Board, the curator went to Boston to testify in a suit brought against the board for loss to a cargo of mahogany, sustained in part through an attack of shipworms, which it was believed had occurred in transit, but the source of which proved to have been occasioned while the logs were anchored in the mouth of a river in West Africa before shipping.

In the division of echinoderms, 72 lots of material were received for identification during the year.

In the division of plants assistance was rendered to various Government bureaus, as the Bureau of American Ethnology, the Geological Survey, and several bureaus of the Department of Agriculture, as well as to State universities, numerous scientific and educational institutions, and private individuals, upon a great variety of subjects. Much of the help extended relates to inquiries regarding appropriate literature, herbarium management, geographical distribution of species, bibliographical details and the like, while a large part consists in providing identifications of plant material submitted for that purpose, sometimes informally by local residents. In all, some 283 lots of material consisting of 6,092 specimens have been received and reported upon during the present year, a smaller number than usual.

VISITS TO OTHER INSTITUTIONS OR PLACES ON OFFICIAL WORK

During May and June Dr. Remington Kellogg, assistant curator of mammals, visited California in cooperation with the Carnegie Institution of Washington, primarily for the purpose of examining specimens of fossil cetaceans belonging to Dr. A. P. Ousdal, of Santa Barbara.

W. L. Brown, chief taxidermist, was detailed for four days during April of the present year to visit the American Museum of Natural History in New York City, and the Brooklyn Museum for the purpose of studying methods of tanning mammal skins employed in these museums.

Dr. A. Wetmore, Dr. Charles W. Richmond, and Mr. J. H. Riley attended the annual meeting of the American Ornithologists' Union at Charleston, S. C., in November, 1928, and inspected the Charleston

Museum at that time. Doctor Wetmore also visited the Museum of Comparative Zoölogy at Cambridge, Mass.; the Peabody Museum of Natural History, Yale University; the American Museum of Natural History in New York City; and the Academy of Natural Sciences at Philadelphia, in May, 1929, when he studied various materials in connection with business for the Museum. J. H. Riley, in company with Herbert Barber, visited Wingina, Va., May 7 to 10, 1929, to pack the collection of the late Col. Wirt Robinson for shipment to Washington. Doctor Richmond visited Olney, Ill., in the latter part of March to secure the various manuscripts and papers left on the death of Mr. Ridgway and forward them to the Museum.

In August, 1928, Miss Cochran was detailed to study Hispaniolan reptiles and amphibians in the museums of Philadelphia, New York, and Cambridge in connection with a report on the herpetology of the island.

The associate curator of insects, J. M. Aldrich, attended the Fourth International Congress of Entomology at Ithaca, and visited the American Museum of Natural History, New York, for the purpose of studying type specimens in the collection of diptera. At the close of the fiscal year he was detailed to proceed to London to study types in the British Museum. Doctor Schaus visited the Brooklyn Museum to transport personally to Washington the types of Lepidoptera transferred from their collection. He also went over the entire collection of Lepidoptera to make sure that it was in proper condition for shipping to the National Museum. Mr. Barber visited the Brooklyn Museum, American Museum of Natural History, and the Staten Island Public Museum in connection with attendance on the meetings of the American Association for the Advancement of Science in New York City. In addition he made a trip to Wingina, Va., to pack and assist in bringing to Washington the collection of Coleoptera which was bequeathed to the Museum by Col. Wirt Robinson. Doctor Böving attended the Fourth International Entomological Congress at Ithaca, and while there made many contacts of benefit. He also attended the meetings of the American Association for the Advancement of Science, and during this period visited the American Museum and other scientific institutions in New York City.

Doctor Bartsch, curator of mollusks, while in Cuba under the auspices of the Walter Rathbone Bacon scholarship, visited the University of Havana, where he was granted office space for headquarters during his work on the island.

Austin H. Clark, curator of echinoderms, visited the American Museum of Natural History in New York on two separate occasions,

and attended the meeting of the American Association for the Advancement of Science.

Visits to other institutions by members of the staff in the division of plants include two short periods of study at the New York Botanical Garden and the Academy of Natural Sciences, Philadelphia, by Mr. Killip during the year. The honorary curator, Frederick V. Coville, was designated as a representative of the United States Government to attend the Fourth Pan-American Science Congress held in Java during May.

DISTRIBUTION AND EXCHANGE OF SPECIMENS

Duplicates distributed to high schools, colleges, and other similar institutions aggregated 2,539 specimens, of which 1,990 consisted of mollusks and fishes in 9 sets each.

Exchanges to the number of 21,969 were sent out, of which 2,358 were zoological specimens. Of the 19,611 plants thus distributed exchanges comprising lots of 1,000 specimens and over were sent to the Botanical Museum of the University of Copenhagen; the Gray Herbarium of Harvard University; Royal Botanic Gardens, Kew, England; the New York Botanical Garden, and the botanical section of the Riksmuseum, Stockholm.

NUMBER OF SPECIMENS UNDER THE DEPARTMENT OF BIOLOGY

The number of specimens, including duplicates, as far as has been ascertained by count and estimate, now exceeds 8,750,000. The total number is probably much greater since several collections, as the corals, have not been included in the estimate, nor does the number of plants given below include unmounted material of the lower cryptogams.

Estimated number of specimens

Division:		
Mammals		84,427
Birds—		
Skins	238,261	
Alcoholics	8,246	
Skeletons	11,020	
Eggs	82,855	
		340,382
Reptiles and amphibians		87,913
Fishes		711,697
Insects		3,312,534
Marine invertebrates		799,948
Mollusks		1,923,241
Helminths		29,185
Echinoderms		152,723
Plants		1,406,317
Total		8,848,367

REPORT ON THE DEPARTMENT OF GEOLOGY

By George P. Merrill, *Head Curator*

INTRODUCTION

Notwithstanding certain adverse conditions, the accomplishments in the department of geology have been, on the whole, satisfactory, although progress in some of the divisions has been necessarily limited. The prolonged indisposition of one assistant curator and the extended absence of others of the staff in the field have retarded work in the laboratories to a considerable extent, but in general, pending matters have been carried on, and the advantages derived from the field operations in progress will fully compensate for any deficiency in other activities. The year has not been marked by the receipt of such outstanding large accessions as have come in the immediate past, hence it has been possible to devote more time to the collections already in hand.

Field explorations have been so limited in the past by lack of funds that the activities of the year, particularly in mineralogy and vertebrate paleontology, have been encouraging beyond precedent. The assistant curator of mineralogy has spent four months in the field and will be so engaged for at least another month; the curator, assistant curator, and one of the preparators in vertebrate paleontology have engaged in four distinct field operations; and the associate curator in stratigraphic paleontology spent more than two months in investigations in Rocky Mountain Cambrian geology.

ACCESSIONS FOR THE YEAR

The accessions for the year, tabulated below, show a decided decrease, especially in number of specimens, compared with last year, when 212 accessions comprising 112,747 specimens were recorded. The high standard of the acquisitions, however, has been fully upheld.

Division	Accessions	Specimens
Geology, systematic and applied	24	286
Mineralogy and petrology	76	354
Stratigraphic paleontology	56	11,321
Vertebrate paleontology	29	455
	185	12,416

Taken in the order listed above, the more important of these accessions are noted below:

A series of 30 specimens illustrating the building stones of Czechoslovakia was received in exchange for similar American material forwarded in 1927 to Dr. Jaroslav J. Jahn, at Brno. A slab of sandstone from near Abo, N. Mex., covered with pseudomorphs of halite crystals, was received as a gift from W. B. Lang, Roswell, N. Mex. Through Victor C. Heikes and his son, George C. Heikes, examples of lead and zinc minerals were presented by Giesche Spolka Akcyjna from their mines at Katowice, Poland.

Rock specimens illustrating a report on the Fairfield-Gettysburg quadrangle, in Pennsylvania, were transferred by the United States Geological Survey.

The meteorite collection has been materially increased. Of prime importance is a large individual iron weighing 1,060 pounds found in the Zuni mountains, about 40 miles south of Grant, N. Mex. This was purchased through the Roebling fund, to which is also credited a smaller iron weighing 12¾ pounds, found near the western border of Red River County, Tex., and brought to our attention by Dr. L. W. Stephenson, of the United States Geological Survey. Still a third acquisition through this fund is a small meteoric stone from Lawrence, Kans., acquired through H. T. Martin, of the University of Kansas.

As gifts to the meteorite collection there have been received: (1) From the State Museum of Illinois, a 1,000-gram fragment and cast of a stone which fell at Tilden, Ill., in July, 1927; (2) from Dr. Luciano Jacques de Moraes, a small but complete individual weighing 25 grams of a meteorite forming part of a shower which fell at Sierra de Magi, Municipo de Pesqueira, Pernambuco, Brazil, October 1, 1923; (3) from W. B. Lang, a small stone from an unknown fall found at Pecks Spring, Midland County, Tex.

Through exchanges there have been received: (1) From Ward's Natural Science Establishment an 11,995-gram slice of the Weekeroo, South Australia, meteoric iron; (2) from Mr. McKinney, through W. B. Lang, a 20,766-gram meteoric iron found at Odessa, Tex.; (3) from the University of Copenhagen, a slice weighing 1,065 grams from a large iron of Savik, North Greenland; (4) from Harvard University, a 53-pound slab of the iron of Alamo Ranch, 40 miles west of Carbo, State of Sonora, Mexico; and (5) from Prof. H. H. Nininger, a small slice of the meteoric stone found near Coldwater, Kans.

The mineral collections are prospering in a very gratifying manner through the Roebling fund. The most striking addition to the exhibits is a large mass of pegmatite from Newry, Me. Less striking

from the standpoint of exhibition, but of no inconsiderable value, are a nugget of platinum from Choco, Colombia, South America, weighing 17.274 ounces; a geode of amethystine quartz from Brazil; and a cut gem of benitoite, weighing 7.7 carats, being the largest known cut stone of this mineral, the production of which was very limited. The study portion of the collection also has been materially increased in both specimens and species of minerals from American and foreign sources.

As heretofore, exchanges with other institutions and individuals have been an important source of new materials. The principal organizations cooperating have been the Academy of Natural Sciences of Philadelphia; Royal Ontario Museum of Mineralogy, Canada; Technische Hoogeschool, Delft, Holland; Tokyo Geological Institute; Magyar Nemzeti Muzeum, Budapest; Université de Gand and Université de Liege, Belgium; British Museum, London; Geological Survey of India; Museo de Historia Natural, Bogota, Colombia; and National Central University, Nanking, China. Individuals who have cooperated in addition to these collections are M. Vonsen, who, on two occasions furnished fine examples of California borates; Prof. A. Pelloux, Genoa, rare Italian minerals; and Dr. Immanuel Friedlander, of Naples, Italy.

A slab of very fine aventurine quartz was donated by Col. W. B. Thompson, Yonkers, N. Y., in return for courtesies extended by the department.

Attractive objects have been added to the gem collection through the Chamberlain fund, notable among them being a carved statuette of rose quartz; a Chinese carving of tourmaline of unusual colors; a yellow topaz weighing 34 carats; a blue topaz from Maine weighing 43.7 carats; a cameo of Hungarian opal; a bracelet of Indian workmanship set with a large, fine-colored turquoise; and a cut gem of pollucite acquired more for the rarity of material sufficiently clear rather than for its suitability for gem purposes. William B. Pitts, Sunnyvale, Calif., made a second donation of rough and cut gem stones, and Dr. F. E. Wright, of the Geophysical Laboratory, presented a stickpin carved from crocidolite.

Type specimens constitute the most valuable material acquired by the division of stratigraphic paleontology. These include several lots of Upper Paleozoic ostracods, and two lots of Mississippian and Pennsylvanian invertebrates from Oklahoma, Arkansas, and Kansas, received from Bruce L. Harlton, of the Amerada Petroleum Corporation, and Dr. Charles Ryniker, of the Gypsy Oil Co., Tulsa, Okla., respectively. Other ostracod types were donated by Miss Betty Kellett, Cushman Laboratory, Sharon, Mass. The State Geological Survey of Florida presented cotypes of Foraminifera de-

scribed by Dr. T. Wayland Vaughan and a fossil crab described by Dr. Mary Rathbun. Type material from the Upper Cretaceous of Alabama, figured in reports of the survey of that State and the United States Geological Survey, was transferred by the latter organization.

By exchange with Ward's Natural Science Establishment we were given the opportunity to secure types of Devonian invertebrates from the Webster collection, one of the older noted collections illustrative of the Devonian of the Mississippi Valley.

The collaboration of Dr. August F. Foerste in his study of the Lower Paleozoic formations of Estonia and neighboring countries of Europe brought to the Museum valuable material which will be of service in the intercontinental studies now under way by members of the division. Similarly, Dr. Erwin Pohl contributed a series of invertebrates collected from the Windsor formation of Nova Scotia during the summer of 1928.

The Cambrian collection was increased by the field work of the associate curator and by the transfers from the United States Geological Survey.

The Geological Institute of Charles University, Prague, presented an excellent series of Bohemian Ordovician, Devonian, and Cretaceous species of Bryozoa, all new to the collection and valuable for comparison with American faunas. C. T. A. Gaster, of Hove, Sussex, England, who collected many of the described species from the Cretaceous of England, presented 250 specimens of Cretaceous bryozoans from Sussex, thus supplying us with topotypes of many of the English forms. Oil drillings in the Tertiary rocks of Australia brought to light some new faunas of this group, five lots of which were donated by Dr. F. C. Chapman, of Melbourne, with the request that they be studied in order to throw light upon stratigraphic projects now under way.

Additions to the echinoderm collection, though few in number, consist of exceptionally well-preserved examples. Three rare starfishes and five crinoids from the Ordovician of Minnesota were acquired through the Springer fund, and a gift from W. A. Betikofer, Washington, D. C., comprised two starfishes from the Devonian of New York. These are not only excellent specimens but indicate a new locality which may yield additional good material. A very rare and interesting echinoid from the Mississippian rocks of Tennessee was acquired by exchange with the University of Virginia.

Dr. Mary Rathbun's continued interest in building up the fossil crab collection has resulted in various accessions, those from Washington and Stanford Universities, and from the Florida survey, mentioned above, being especially noteworthy.

Again Frank Beckwith has presented Middle Cambrian trilobites from Utah; E. H. Vaupel choice Silurian fossils from southwestern Ohio; and the researches of Rev. David C. Graham in China have afforded interesting material from that country.

Additional gifts notable for rarity and scientific interest include types of fossil beetles from the Eocene of Tennessee and Arkansas, of Cretaceous Foraminifera and an Eocene insect from Tennessee, presented by Dr. E. W. Berry, Johns Hopkins University; and several excellent Silurian crinoids and a rare Devonian sponge, by Prof. W. H. Shideler, Oxford, Ohio.

Accessions of paleobotanical material, although few in number, include material of unusual interest. Type specimens of freshwater algal deposits from the Green River formation of Colorado, Utah, and Wyoming, were transferred by the United States Geological Survey. An exchange with the Riks Museum at Stockholm yielded excellent exhibition and study material from the Permo-Carboniferous of Shansi, China; and Prof. O. M. Ball, College Station, Tex., presented 50 fossil plants from Colorado and Texas.

The material resulting from field operations by Curator Gilmore's party in the Two Medicine formation of Montana is of primary interest and importance to the vertebrate collections. Outstanding specimens are an incomplete skeleton of the little known *Panoplosaurus*, a skull of an undescribed armored dinosaur, two partial skeletons of a hadrosaurian dinosaur, parts of a skeleton of *Monoclonius*, and the frill portion of the horned dinosaur *Styracosaurus*. The collection from this expedition as a whole has much scientific significance.

Among other important accessions are the Pleistocene mammals obtained by Assistant Curator Gidley at Melbourne, Fla., during work financed jointly by Childs Frick and the Smithsonian Institution; the collections made by H. T. Stearns, of the United States Geological Survey in Idaho; and four elephant teeth from North Carolina, gift of the American Museum of Natural History. The Florida collection includes a new species of bear and material giving important data on the age of the beds from which it was obtained. The material from Idaho, transferred by the survey, was considered of enough importance to justify further investigation by a field party from the Museum.

Our collection of fossil footprints was augmented by slabs from the Triassic of Massachusetts, acquired through an exchange with the museum at Amherst College.

INSTALLATION AND PRESERVATION OF COLLECTIONS

The 1,060-pound meteorite from the Zuni Mountains was installed on a pedestal in the hall devoted to physical and chemical geology.

This large, pyramidal-shaped object is unlike any other meteorite in the collection and forms a striking addition to the display. Others of the newly acquired meteorites were added to the case exhibits, a number of the smaller examples being removed and relegated to the study collections.

A case containing drill cores from potash deposits in New Mexico and Texas forms the chief addition to the economic exhibits. These are from collections transferred last year by the United States Geological Survey, a member of whose staff, E. P. Henderson, installed the exhibit.

Several of the cases somewhat hastily installed during the World War, notably the exhibit of uranium-vanadium ores, were overhauled under the direction of the head curator and small or duplicate specimens eliminated, while other cases were dismantled, the materials having served their purpose and their display considered no longer necessary.

No important changes have been made in the mineral exhibits, the preliminary work of the Roebling and Canfield collections not having reached a point where the contemplated changes that are to be made in the systematic arrangement could be carried out. The extended absence of the assistant curator has been the chief factor in delaying this work.

The large pegmatite mass noted in the accessions was installed as a special exhibit. Green and pink tourmaline, violet lepidolite, and white albite mingled in this specimen make it a unique object.

No work other than the annual cleaning and overhauling has been attempted in the exhibits in stratigraphic paleontology, including paleobotany. This work was more pressing this year than usual on account of the dust due to repairs on the rotunda. Condensation and better arrangement of certain of the exhibits furnished some additional space. Further reduction by elimination of the less choice material must be resorted to in order to install new exhibits since practically all available space is now utilized.

Minor repairs and some renovation constituted the only work on the exhibits in vertebrate paleontology. A complete rearrangement is anticipated in connection with the mounting of the *Diplodocus* skeleton, a work which it is expected will be begun early in the fall.

Work on the records and in the laboratories has been continuous. One accomplishment of the year has been the assembling of materials and preparation of a series of school sets illustrating the weathering of rocks and formation of soils. These were collected, trimmed, labeled, packed, and made ready for distribution. One hundred similar sets of rocks, minerals, and ores, made up from duplicates that have been accumulating for some years, and numbering upward of 80 specimens each, have also been made ready for distribution.

Several hundreds of pounds of black sands from the Pacific coast which have been stored in the loft for some years have been overhauled by Mr. Shannon and representative samples selected where it was deemed advisable and placed in glass jars for preservation.

The cataloguing of the Roebling collection of minerals was completed, and the Canfield collection has been entirely rearranged, ready for inspection by the assistant curator before cataloguing. All of the collections secured by Doctor Foshag in Mexico in 1926 and 1927, minerals, rocks, and ores, have been arranged and catalogued.

Efforts on the study collections in stratigraphic paleontology have been directed mainly toward the registration and numbering of specimens of both old and current accessions and toward a better arrangement of the various series as circumstances render practicable. The receipt of several new storage cases made possible a better installation of the most valuable and fragile specimens and the thin sections, which have been placed in the curator's office room. Here also additional bookcases accommodate a good working library resultant from the transfer from the Smithsonian Building of Doctor Walcott's paleontological and stratigraphical pamphlets and volumes.

Curator Bassler has devoted his time largely to the care of the post-Cambrian Paleozoic collections, Doctor Resser's time has been fully occupied with his researches on the Cambrian, while the Mesozoic and Cenozoic collections have been under the custody of Doctors Stanton and Bartsch, respectively. Satisfactory progress has been made on the final installation of the Springer, Austin, Teller, and Foerste collections, and a beginning made on the condensing and labeling of the large Williams collection of Devonian fossils.

Two outstanding pieces of work were accomplished in the section of paleobotany—a reorganization of the library and bibliographic catalogues and a reduction of a considerable part of the duplicate collections by distributions as gifts or exchanges. Further condensation of the biologic series of fossil plants resulted from a general shifting incidental to painting the walls of the rooms.

Acknowledgment is due to the various members of the United States Geological Survey who have quarters assigned them in this division for their efficient help in the care of the collections.

The preparators in the division of vertebrate paleontology, as for several years past, have devoted themselves chiefly to the preparatory work on the *Diplodocus* skeleton. This is now so far advanced that it is confidently expected its erection can be begun early in the coming fall. Incidentally, some of the more important specimens of the 1928 Montana collection, articulated skeletons of *Mery-*

coidodon, and a 3-toed horse, as well as various materials under investigation, have been prepared. The study collections were improved by a number of minor rearrangements, but on account of lack of space for storage, the mammal material is still in need of classification and distribution. The erection of storage galleries in the coming year will, it is hoped, better these conditions.

INVESTIGATION AND RESEARCH

(*a*) *Research by members of the staff.*—The head curator has continued his researches on meteorites, having prepared and published a brief paper on a newly acquired stone from Peck's Spring, Tex. Revision of a previously prepared paper on the structure and composition of meteorites was also completed and the manuscript submitted for publication.

Doctor Foshag spent approximately three months in a comprehensive field study of the boron deposits of the western United States. Laboratory work in the early months of the year was given over largely to a study of the Mexican material collected in 1926 and 1927.

Doctor Bassler, in collaboration with Ferdinand Canu, completed a monographic study of the Recent Bryozoa of the Galapagos Islands, which has been submitted for publication. At the request of the paleontologist of the Geological Survey of Australia, he has begun a study of the Tertiary bryozoans of that country in an effort to work out the underground stratigraphy of areas in southern Victoria now being searched for petroleum.

Doctor Bassler's further researches include cooperative work with the Geological Survey of Tennessee in a report dealing with the stratigraphy of the State.

Mr. Gilmore has continued his study of Mongolian turtles submitted for investigation by the American Museum of Natural History, and has prepared a brief description of the osteology of a Pleistocene turtle from Florida. Studies of his Montana collection are under way, the armored dinosaur *Panoplosaurus* being given first consideration.

Doctor Gidley has continued studies of the Pleistocene mammals from the cave deposits near Cumberland, Md., in connection with which certain material of the same age from Melbourne, Fla., is being studied for comparative purposes. Remains of a fossil bear from the latter locality have been described. A restudy of the problem of the presence of early man in Florida, based on the field work in 1928, has been the subject of a paper prepared for publication.

(*b*) *Research by outside investigators aided by Museum material, including work in the Museum or material loaned.*—Forest A. Gonyer

has again spent a year as student assistant in the chemical laboratory under the direction of Doctor Foshag, and has also engaged in an investigation of clay minerals for the National Research Council.

The paleontological collections have been extensively studied for long or short periods by numerous members of both foreign and American universities, oil companies, and other organizations, who have investigated not only fossils of certain groups in which they were interested but methods of recording and installation. A comparative study of the Cambrian collections with those of Manchuria is in progress by R. Endo, of the South Manchurian Educational College, who has been furnished office room and other facilities for the 2-year period which he anticipates spending in this work. Dr. H. S. Ladd, of the University of Virginia, is continuing his study of early Silurian fossils of the Mississippi Valley in connection with a report in preparation for the Iowa Geological Survey. Our methods of studying and illustrating microfossils were investigated by Bruce Harlton, of the Amerada Petroleum Corporation, and Dr. Charles Ryniker, of the Gypsy Oil Co.

The collections have, as usual, been constantly under investigation by members of the United States Geological Survey, and Prof. E. W. Berry, of John Hopkins University, has spent one or two days each week in studying fossil plants. Dr. Remington Kellogg, now assistant curator of mammals, has continued his studies of the fossil cetaceans, and, as in previous years, has published descriptions of Museum specimens. Dr. O. P. Hay also has continued his use of the Pleistocene vertebrates. The benefit derived from this constant work on the collections is mutual.

Within the year 1,801 specimens were transmitted to outside investigators.

(*c*) *Assistance by members of the staff to other Government bureaus and private individuals.*—Information concerning various phases of the work of the department and the collections has been given to numerous callers, and members of other scientific bureaus of the Government have been constantly supplied with materials to aid in their researches. The amount of time given over to the identification of materials sent in from outside is not small. Within the year 383 lots have been reported on, including all vertebrate fossil material collected by the field parties of the United States Geological Survey, some of which are quite large collections requiring lengthy research. The furnishing of replies to official letters as well as answering those received personally but relating to official matters is also time consuming. During the year 415 letters from the division of correspondence passed through the head curator's

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office; no record is kept of those received and replied to directly from the offices of the department.

(*d*) *Visits to other institutions on official work.*—The majority of the scientific staff of the department attended the meetings of the geological, mineralogical, and paleontological societies of America at New York City and took advantage of the opportunity to examine various collections in that city. Mr. Gilmore, on his return journey from his field work in Montana, visited the following institutions for the purpose of inspecting their paleontological collections: University of Utah, Salt Lake City; University of Wyoming, Laramie; Colorado Museum of Natural History, Denver; University of Kansas, Lawrence; and Field Museum of Natural History, Chicago.

DISTRIBUTION AND EXCHANGE OF SPECIMENS

Of the sets illustrating phases of rock weathering and soil formation, 18 comprising 244 specimens were presented to schools. Additional material, prepared on special requests, shows the following numbers: 765 specimens at gifts, 1,801 specimens as loans for study, and 1,589 specimens as exchanges. Transfers to other Government departments consist of 22 specimens and 250 pounds of material in bulk.

NUMBER OF SPECIMENS UNDER DEPARTMENT

The estimated totals as given by heads of divisions are as follows:

Geology, systematic and applied	93,044
Mineralogy and petrology	132,279
Stratigraphic paleontology	1,765,600
Vertebrate paleontology	24,497
Total	2,015,420

DEPARTMENT OF ARTS AND INDUSTRIES AND DIVISION OF HISTORY

By William deC. Ravenel, *Director of Arts and Industries*

INTRODUCTION

The year ended June 30, 1929, has been one of constant effort to improve the arrangement and condition of existing collections in the department of arts and industries and the division of history and at the same time to properly care for incoming collections. With a fixed exhibition area, already much overcrowded, attention has been focused on the arrangement and condensation of the collections in the least space with the best possible classification and installation. Replacements and betterments have generally been sought rather than new subjects for installation. This in part accounts for the fact that the additions to the collections have been decidedly fewer than for some years past.

In the division of graphic arts the services of the staff were largely devoted to the assembling of the work of the miniaturist Edward Greene Malbone for an exhibition in the National Gallery of Art, which reflected much credit on the institution. The photographic collection, as it becomes better known generally, is attracting to itself contributions of special note, and the prospects for its future are particularly bright.

With regard to the division of history, it is felt that the events of this fiscal year will continue to affect the development of the historical collections for years to come. A comprehensive plan for the betterment of the military collections of the Museum has been devised as the result of the cooperation of the War Department, through its able representative, Maj. Louis A. O'Donnell. At the close of the year considerable progress had been made toward putting these new plans into effect, but the undertaking is a large one, capable of accomplishment only when additional financial assistance is forthcoming. The War Department has rendered invaluable aid in this matter and has made possible much of what has been accomplished.

Despite unusual disturbance due to rearrangements of the exhibition collections the Arts and Industries Building has at no time been closed to the visiting public. In fact, the number of visitors to the building this year has been remarkably large, exceeding for

the first time those to the Natural History Building. This is doubtless due in large measure to exhibition of the *Spirit of St. Louis* and the period costume collection, which continue to be of general interest to the visiting public.

It is felt that real progress has been made this year in the department of arts and industries and the division of history, and much credit is due to the staff, including especially the labor force and its foreman, for the manner in which the many trying problems of this year have been met. With the continued hearty cooperation of all the workers, the plans now in course of execution for the better installation of the collections will in the near future materially improve conditions.

ACCESSIONS FOR THE YEAR

The department of arts and industries and the division of history acquired 9,649 specimens during the year, assigned as follows: To mineral technology, 116; mechanical technology, 258; textiles, 532; foods, 15; organic chemistry, 514; wood technology, 617; medicine, 346; graphic arts, 865; Loeb collection of chemical types, 104; and history, 6,282. Numerically the increment for 1929 was about half the average for the preceding eight years. The scientific interest and value of the additions, however, were relatively very high, since many of the specimens were designed to fit into gaps or to replace faded or obsolete exhibits. Space permits of mention in detail of only the more important additions.

Mineral and mechanical technology.—In the divisions of mineral and mechanical technology the accessions for 1929 represent a 75 per cent increase over the preceding year. Of the 374 objects received, 116 were assigned to mineral technology and 258 to mechanical technology. The transportation, horology, tool, and power sections were the principal beneficiaries in mechanical technology, while in mineral technology the section on glass technology profited most.

Four automobiles were added to the collections on land transportation, three Wintons presented by the Winton Engine Co., and a Simplex, presented by Mr. and Mrs. John D. Adams. The Winton cars include the first car made and sold by Alexander Winton in 1898, and two racing automobiles, *Bullet No. 1* and *Bullet No. 2*, which he constructed between the years 1901 and 1903. The racers were driven by Winton, Barney Oldfield, and other automobile drivers in the first days of automobile racing, and the speed record of the 8-cylinder *Bullet No. 2* had not been surpassed at the time it was retired in 1905. The Simplex roadster was built in 1912 and was in constant use by the son of the donors up to the

time of his death in 1928. It is similar in design to that used by the famous automobile racer Ralph De Palma in his races of 1912.

Another interesting and valuable accession in the land transportation section is a horse-drawn brougham, the gift of William P. Eno. The carriage is a very fine example of the work of the famous nineteenth century coach builder, Healey, of New York, and is patterned on the Peters model. Horse-drawn vehicles are fast becoming objects of museum interest and it is hoped that suitable space will become available in the National Museum for the proper preservation of this important phase of land transportation. To the collection of bicycles there was added a Columbia tandem, donated by Mr. and Mrs. Goldwin Goldsmith. It is believed that with this accession the collection of bicycles in the Museum contains an example of all popular types thus far introduced.

The railway section was enhanced by a beautifully constructed model of the American type of locomotive, the type widely used in the early part of this century in passenger train service. This was constructed by Robert E. M. Bain, the donor, and is made to a scale of one-twelfth actual size. The locomotive, about 4 feet in length, is complete in every detail, and can be operated under its own steam. Mr. Bain, whose hobby is model work, also presented to the Museum a model of an ocean-going tugboat, constructed some years ago. This was added to the water-transportation section. Here, too, is exhibited an original outrigger rowboat, the gift of Charles G. Warden. This type of pleasure craft was extremely popular on the Potomac River in the eighties, but was superseded by the modern canoe.

One of the most interesting additions made to the collection of aircraft engines during the year is one of the Wright Whirlwind engines of the Army Air Corps C-2 transport *Question Mark*, received as a transfer from the War Department. Under the supervision of the War Department and for the announced purpose of keeping the plane in the air as long as its engines would function, this tri-motored Fokker monoplane took off from Metropolitan Airport, Los Angeles, Calif., on January 1, 1929, at 7.26.46 a. m. Five men lived aboard the plane for almost seven days and landed at the same airport on January 7, 1929, at 2.07.01 p. m. During that time 36 contacts were made with fuel and supply planes and 21 tons of supplies (gasoline, oil, and food) were taken aboard. The three engines burned 5,200 gallons of gasoline and the plane flew 11,500 miles, a distance equal to nearly halfway round the world. The *Question Mark* ended its flight of 150 hours, 40 minutes and 15 seconds because of worn rocker arms of the engines. Of the three

engines, the center one, now in the Museum collection, was least affected by the grueling test.

A second accession of interest in the aircraft collection was the gift of a glider. William H. Martin, the donor, was interested in aeronautics as early as 1887, and continued his studies throughout the whole experimental period in aeronautics, culminating his work with the construction of this glider, made in 1909, and flown in similar fashion to a kite, but towed by a horse or automobile. Elevations of 50 feet with the pilot aboard and glides of 250 feet in length were obtained in many repeated flights. There were also secured, as a transfer from the Department of the Interior, the original papers constituting the bid of the Wright Bros., made in 1908, for a military airplane. Their bid of $2,500 was accepted and resulted in the construction of a biplane, the first Government-owned airplane in the world. The original plane has been in the aircraft collection of the Museum since 1911.

The outstanding additions to the section of horology consisted of two loan collections, one of watches and the other of clocks. The collection of watches, comprising 30 specimens, was deposited by the Horological Institute of America, which organization received the collection made by the late James Warren Packard, the automobile manufacturer. Most of the watches are modern and were made to order for Mr. Packard by English, French, and Swiss watchmakers. The collection includes intricate and beautifully executed mechanical movements, some of which require as many as 53 jewels to insure their accurate operation. There are movements which not only indicate standard time but strike the hours, minutes, and seconds; show split seconds; indicate the moon's phases and the days of the month continuously for a hundred years, taking leap year into account; and even show the positions of some 400 stars in the latitude of Warren, Ohio, the home of Mr. Packard. A collection of seven clocks was loaned by George H. Kernodle, including examples of the types of domestic clocks used during the seventeenth, eighteenth, and the first half of the nineteenth centuries. There is a Dutch chamber clock of the period 1640–1680; a German "Wag-on-the-Wall" of 1725; an Eli Terry shelf clock of 1818; a Burnham Terry "Hang-up" clock of 1830; a Forrestville shelf clock of 1850; and a Seth Thomas shelf clock of 1860. There is also included a very ornate example of German or Swiss cuckoo clock popular in this country around the period of 1870. To its clock and watch exhibit the New Haven Clock Co. added as a gift a large working model of the type of pendulum clock escapement largely used in American-made clock movements at the present time.

The Waltham Watch Co. added an early automatic watch parts lathe to the section of tools. This machine antedates the present type of automatic turret lathe and was used in the making of watch arbors and pinions. Cabinet makers' tools were received as gifts from Frank H. Cole, T. E. Krake, and Dr. Walter Hough, and a collection of 45 gunmakers' hand tools was presented by William Monypeny Newsom. The Yale & Towne Manufacturing Co. donated four specimens of hoisting pulleys and gears, comprising a differential pulley block, screw-geared block, an operating spur gear block, and a sectionalized spur gear block. These objects are very properly used in connection with the exhibit on mechanical power.

To the collection of surveying instruments there was added a surveyor's chain of the period of about 1780, which was supposed to have been used by Andrew Ellicott in surveying the District of Columbia. This was loaned by the Association of the Oldest Inhabitants of the District of Columbia. The Museum also acquired a surveyor's theodolite of the same period, said to have been used by the surveyor, Orange Warner Ellis, in the survey of the New York-Vermont boundary line.

The American Telephone & Telegraph Co. contributed large working models of the telephone transmitter and receiver. The instruments are halved and so arranged that by the movement of a hand lever on the outside of the exhibition case the diaphragms of both the transmitter and receiver are made to move in unison just as these diaphragms function in the actual telephone. The exhibit with its descriptive label clearly explains just what happens when one talks into the transmitter or listens at the receiver of a telephone.

Mention was made in the last annual report of plans for the preparation of an extensive exhibit on mechanical power. During the year some valuable accessions were received for use in this section. Foremost of these is a beautifully executed, electrically operated model of the original Pearl Street electric power station in New York City. The model was made and presented to the Museum by the New York Edison Co. Pearl Street station was the first permanent central power station in the world, the plant having been put in operation on September 4, 1882. An original Ericsson hot-air pumping engine was acquired as a gift from Dr. Jonathan R. Hagan. An early Otto 4-cycle gas engine of the period of 1882, a third important accession to this section, was secured with the valued help of the Otto Engine Works. The engine is original

throughout and is one of the first type of commercially successful 4-cycle gas engines.

Through the valuable gift of the William Sellers & Co. (Inc.), comprising four steam injectors of various periods between 1876 and 1929, the power section has assembled a very complete and unique exhibit showing the development of steam injectors. The exhibit, as a whole, includes the original Patent Office model of Henri Giffard's basic invention of 1860; a number of patent models of subsequent improvements made by William Sellers, who purchased Giffard's patent; and a progressive series of commercial injectors to 1929.

The glass industry section of the division of mineral technology received two valuable increments during the year. The first of these was a very complete collection of 90 specimens to visualize the technology of glass enameling, together with an appropriate display base, donated by the Pfaudler Co. By the arrangement of the exhibit there is visualized the manufacture of glass enamel-lined steel containers, such as the glass-lined tank milk car, the commercial catsup cooker, the glass-lined vats used in the manufacture of perfumes, and glass-lined laundry chutes. Colored enamel designs, such as the automobile manufacturer uses on the automobile radiator, are likewise explained. The Corning Glass Works, through the kindly cooperation of its president, Dr. Eugene C. Sullivan, the vice president, Dr. Arthur L. Day, and Frederick Carder, general manager of the Steuben division, augmented its exhibit of commercial and art glassware by the gift of 3 pieces of the first designs of Pyrex glass and 18 excellent pieces of art glass including goblets, vases, bowls, and ornaments. Among these are a few reproductions of antique glass, some beautiful examples of fine crystal both etched and cut, some delicately colored pieces, and two examples of very modern art in the form of a lighted decorative panel of etched glass and a cut crystal ornamental lamp.

Textiles, foods, organic chemistry, wood technology, and medicine.—The accessions for the year in the division of textiles, the sections of foods, organic chemistry, and wood technology, and in the division of medicine aggregated 2,024 specimens, not including several hundred original patent models still under examination, some of which will be definitely added to the collections when their value has been proved. The increment was assigned as follows: To textiles, 532 specimens; products of chemical and animal industries, 514; forest products, 617; foods, 15; and medicine, 346.

Efforts to keep up with the rapid development and importance of rayon as an industrial fiber resulted in the acquisition of several

series of specimens showing the manufacture and uses of this beautiful addition to the quartet of fibers—wool, silk, cotton, and linen—which for so long has been of service to mankind. From the Du Pont Rayon Co. (Inc.) was received a series demonstrating the viscose process, beginning with the wood which furnishes the cellulose base and including a full-sized model of a section of a rayon-spinning machine and specimens of fabrics of different types. Beautiful fabrics, plain and fancy, piece-dyed, printed, and figured, showing applications of a synthetic fiber produced by the cellulose acetate method, were contributed by the Celanese Corporation of America.

In keeping with the policy of showing important steps in industrial processes, an endeavor has been made to show the technique of textile ornamentation, how the particular design or effect is developed on the fabric. Such exhibits are much more difficult to procure and generally represent much expenditure of time and money by the cooperating manufacturer. An example of this type of exhibit was contributed by L. C. Chase & Co. showing the method of block-printing heavy plush upholstery fabrics.

A number of manufacturers, who in the past have generously contributed exhibit material, cooperated this year by substituting fresher specimens for those which had deteriorated, or which were no longer representative of present day manufactures. The Collins & Aikman Corporation sent specimens of upholstery pile fabrics, showing the use of cotton, rayon, mohair, and combinations of these fibers in the manufacture of plain plush, figured velour, and jacquard velvet, while the Massachusetts Mohair Plush Co. donated eight specimens of mohair upholstery plushes. The Pacific Mills, which 44 years ago began to assist the Museum in maintaining an exhibit of cotton manufactures, sent 46 examples of fabrics made of all cotton and cotton and rayon mixtures for replacement of less desirable specimens.

The Museum is indebted to H. R. Mallinson & Co. (Inc.), for a series of novelty dress goods which demonstrates the possibilities of design creation in the form of application of picturesque history to silk fabrics. Each pattern in this group has been inspired by some well-known figure or incident of early American history.

A fine old linen damask tablecloth, ornamented with a large medallion portrait of George Washington, was presented by the Misses Lillie G. and Virginia M. Hopkins for inclusion in the linen section.

As part of an exhibit illustrating the development of the sewing machine, the Singer Sewing Machine Co. lent eight original models made by Allen B. Wilson when he was working out the principles of the revolving hook sewing machine invented and patented by him

in 1854. The same company donated a rotary shuttle Singer sewing machine of the latest type, in which parts of the frame and bedplate have been cut away to expose the essential moving parts. This machine has been installed and equipped with an electric switch and special rheostat so that it can be operated at an unusually slow speed by the Museum visitor. To demonstrate the kinds of work that can be done with the aid of the attachments usually sold with this type of sewing machine, the Singer Co. also contributed a set of attachments and examples of fancy sewing done on linen and silk fabrics including binding, hemming, gathering, plaiting, tucking, quilting, embroidery, lace, etc. Cooperation between the Singer Sewing Machine Co. and the National Museum began over 37 years ago when a series of historic machines was presented by the company.

As the result of considerable planning and cooperation, the United Shoe Machinery Corporation brought together and donated a very comprehensive exhibit, comprising nearly 300 different specimens, which covers the whole range of shoemaking by machinery. Shoes are now all made by one of five different processes or methods of assembling the parts of the shoe and stitching them together. Two other methods of making shoes, which are historically important but now seldom used, were included in the series. These seven types of shoe manufacture are arranged in the following order:

1. The pegged shoe, using wooden pegs and made by hand until 1860; since then pegging machines have been used. At one time very important but now seldom seen.

2. The standard screw shoe, in which the sole is "screwed" on by means of a form of wire carrying a continuous screw thread. While but little used now, the "Pershing shoe" used by the American troops in the World War was made on this plan.

3. The turned shoe, in which the shoe is made wrong side out and then turned. Used for slippers and high grade thin-soled shoes for women and children.

4. The stitch-down shoe, in which the upper is not turned under like the others, but turned out and stitched down to the outsole. Used for children's shoes.

5. The McKay sewed shoe, in which the sewing goes clear through to the inside of the shoe. Used generally for women's and children's shoes.

6. The Littleway process shoe, in which no tacks or staples appear on the surface of the insole. Used for women's wear and for athletic and work shoes.

7. The Goodyear welt shoe, in which the upper and the sole are both sewed to the welt, a narrow strip of leather extending from in front of the heel around the forepart of the shoe. A widely used type.

Through the cooperation of the Intercontinental Rubber Co. and an associated company, the American Rubber Producers (Inc.), the rubber section was augmented by an exhibit of American-grown rubber obtained from guayule plants grown under cultivation. The guayule is a low shrub from which the rubber is obtained by grind-

ing or milling the entire plant so as to aggregate the minute particles of rubber which are contained in its tissues. The aggregated rubber particles are separated from the waste material through their buoyancy when immersed in water. This rubber is never fluid and in this respect is unlike the rubber contained in the milky juice of the Hevea tree.

To the collection of personal mementos of Charles Goodyear, inventor of vulcanized rubber, there were added 15 specimens of hard rubber jewelry and other objects exhibited by Charles Goodyear at the London Crystal Palace Exhibition in 1851 and the Paris Exposition of 1855. These objects were purchased by the Rubber Association of America (Inc.) and deposited with the Museum as a loan.

The exhibit of Fabrikoid, a leather substitute, was practically replaced by a new and enlarged series of specimens showing process of manufacture, contributed by E. I. du Pont de Nemours & Co. (Inc.).

The Celanese Corporation of America contributed a series of 66 specimens illustrating the manufacture of cellulose acetate plastics. Serious accidents resulting from the use of photographic films made by the cellulose nitrate process have brought the development of a film made from cellulose acetate which is not inflammable.

A piece of silk dyed with mauve by Sir William Henry Perkin in 1860, shortly after his discovery of this, the first aniline dye, was presented by William J. Matheson. The specimen is mounted in a heavy brass lightproof frame.

Excellent material for an exhibition of archery tackle in the section of wood technology was received from the following contributors: The Archers Co., Cassius Hayward Styles, Knight Archery Co., and W. H. Willner. The combined accessions cover 45 specimens representing an industry which demands the most exacting qualities in the wood it uses. Included are 7 fine bows, 3 of yew, 1 of snakewood, and 3 of lemonwood; 24 finished and 5 unfinished arrows showing stages in manufacture.

The health exhibits in the division of medicine are planned to show what the individual may do to preserve health; how a community may protect the health of its people; and how hospitals attend to cases of injury and sickness which are beyond the control of the individual and the community. The American Hospital Association agreed to furnish a set of 96 colored transparencies, 16 inches by 20 inches, to illustrate the third phase of development, and appointed a committee to cooperate with the Museum. This committee was composed of Richard P. Borden, chairman, president of Union Hospital, Fall River, Mass.; Dr. Winford H. Smith, director of the Johns Hopkins Hospital, Baltimore, Md.; and Daniel D. Test, superintendent of the Pennsylvania Hospital, Philadelphia,

Pa. The committee communicated with the various hospitals throughout the United States, and, after much preliminary work, selected appropriate views to illustrate the subject. The series illustrates hospitalization in as complete a manner as the available space will permit, beginning with a picture of an accident and injury, transfer of a patient to the hospital by ambulance, and then gradually progressing through the procedures of administration, examination, treatment, convalescence, and discharge. Eighty-five of the transparencies were finished and contributed by the association during the year. When completed this series will form one of the most complete exhibits of its kind.

Mrs. Marie D. Gorgas, widow of the late Maj. Gen. William C. Gorgas, former Surgeon General of the United States Army, loaned 66 additional specimens for exhibition in the Gorgas collection.

As a representative of the American Osteopathic Association, Dr. Riley D. Moore, a former member of the Museum's scientific staff, has cooperated for several years in the work of collecting material to illustrate the history and principles of osteopathy. In addition to contributing material himself, he has interested many members of the association in the work and has induced them to contribute historic objects pertaining to the subject. Nine such contributions were added to the osteopathy collection during the year.

The materia medica collection was enhanced by the following contributions: Forty-three organotherapeutic medicines from Armour and Company; 32 vegetable drug constituents from Frederick Stearns & Co.; 20 medicinal alkaloids and alkaloidal salts from Merck & Co. (Inc.); 15 official pharmaceutical preparations of nux vomica from Sharp & Dohme (Inc.); 9 pharmaceutical preparations of cinchona from John Wyeth & Brother (Inc.); 7 official medicinal derivatives of *Betula lenta* from the William S. Merrell Co.; 3 official pharmaceutical preparations of cascara sagrada from Eli Lilly and Company; and 4 official pharmaceutical preparations of cinchona from Schieffelin & Co.

An iron mortar and pestle were received as a gift from Dr. J. T. Lloyd. This fills a gap in the collection of pharmaceutical equipment and is of added interest since it was used more than 60 years ago by the donor's father, Dr. John Uri Lloyd, during an apprenticeship in pharmacy. The latter is one of the few living pioneers who took an active part in creating the sentiment which resulted in the development of the National Formulary, the second official book of medical standards in use in the United States. He has cooperated for many years in the development of the collections. This year he presented a copy of volume 1 of his work, Origin and His-

tory of all the Pharmacopoeial Vegetable Drugs, Chemicals, and Preparations, with Bibliography.

Graphic arts.—The numerical growth of the collection in the division of graphic arts and the section of photography did not come up to that of the preceding year. The advance in other lines, however, was more marked. An aggregate of 865 specimens was added to the permanent collection, and some 2,182 additional specimens were received as loans, most of which had been returned to the owners before the end of the year.

One of the recent developments in printing is a hand method called "silk-stencil," which, for small editions, competes with other methods of printing. Three accessions of prints of this kind were received this year. One of these, a series of progressive proofs prepared by H. E. Jones & Sons, (Inc.), has been placed on exhibition, with two other specimens. In this method the stencil, a finely woven silklike bolting cloth, is prepared by painting over that part of the silk that is not to print, leaving the design still open. This prepared silk is placed on a hinged frame. A large amount of ink is placed on top at one end, paper placed underneath the silk and the ink drawn across the surface with a scraper, the ink going through only the porous parts. This leaves a heavy body of ink in which is seen the texture of the silk. Each color is printed in this way, but there is no mixing, each color being opaque. The results are brilliant posterlike effects which are used largely in advertising. This is said to be an American process.

Another new exhibit, while not making much of a display, marks an important economic event. This is a copy of the Sunday Commercial News of December 16, 1928, donated by the publishers, and is printed on paper made from cornstalks.

To the bookbinding exhibit were added 50 samples of bookcloth, illustrating 15 patterns and 35 colors in which each pattern can be obtained. It makes a small colorful addition, for which the Museum is indebted to the Holliston Mills, (Inc.)

Comment upon the pantone process was made in the last report, but as the exhibit was not complete, the Pantone Processes (Ltd.) kindly furnished another exhibit, which has been installed. This process is unique. By the use of amalgamated silver areas on a copper plate which has a chromium metal facing, a plate is made which will take ink on the chromium and reject it on the amalgamated silver. While the process has not, as yet, been introduced into this country, it is used commercially in England, where it was invented.

There were 17 acquisitions of etchings, dry points, lithographs, wood engravings, drawings and examples of fine printing in the form of books, pamphlets, and broadsides, aggregating 68 specimens.

Miss Diana Thorne and George C. Wales added additional examples of their work. Benson B. Moore contributed three of his dry points; Charles E. Heil donated five etchings, three of birds and two others which cover his field fairly accurately; William Meyerowitz and Carton Moorepark contributed representative examples of their work in etching and dry point, respectively. A fine example of the work of Louis Rosenberg was deposited by the Smithsonian Institution. Five etchings by Livia Kadar acquired are exquisite examples done by a well-known procedure, but one not used to a great extent. The lines that are to be the darkest are scratched through the wax first and bitten partially, then the lines which are to be next darkest are scratched in and both sets are bitten, and so on until all the lines are in the plate. As handled by Mrs. Kadar, the results are very successful.

Eight fine examples of color etching done in France and Germany were procured, together with two other prints called silk-stencil but of undetermined process. These 10 prints add a touch of color to the duller hued black and white exhibits.

James Bann, one of the few Americans still producing wood engravings of quality, forwarded two of his recent prints. Another good wood engraving was a portrait of Col. Charles A. Lindbergh, the work and gift of Nicholas J. Quirk. He furnished also an enlargement showing clearly the line work of wood engraving, which adds interest to the exhibition series.

Some years ago a start was made on a collection of examples of fine printing, and this year 26 such specimens were received, including four books: The Triumphs of Petrarch, from the Windsor Press; Some Sayings of Benjamin Franklin, from the Typographic Craftsmen; The Will of the Late Nicolas Jenson, from the Ludlow Typograph Co.; and Twelve Pioneers of Los Angeles, an unusual example, from the Times-Mirror Printing & Binding House. Nineteen pamphlets and broadsides were sent in from the Laboratory Press, Carnegie Institute of Technology, a school of printing which produces artistic printers. A broadside and a portrait were the gift of William Edwin Rudge, who has contributed annually for some years. Alton B. Carty also continued to donate specimens of recent methods in printing, in which he is specially interested, and to assist by suggestions and advice.

The most important specimen of the year, in the section of photography, was the first portrait taken on an autochrome plate, by the inventor of the process, Antoine Lumière. This color photograph was presented by him to Wilfred A. French, of Boston, who gave a dinner in honor of the inventor when he was visiting the United States. It reaches the Museum as a gift from the Boston

Young Men's Christian Union Camera Club, through F. R. Fraprie, editor of American Photography.

Four photographs of bullets fired from a gun were donated by Philip P. Quayle, of the Peters Cartridge Co. The rapidity with which they were taken is the wonder of all who see them. Besides recording the bullet in silhouette, sound waves are also taken. A motion-picture film showing the exploits of Col. Charles A. Lindbergh, a transfer from the State Department, is another notable accession having been given to the United States by the Motion Picture Producers & Distributors of America (Inc.). A portrait on leather, dated Baltimore, Md., September 28, 1859, a unique acquisition, though portraits on leather were quite common when this was made, came as the gift of DeLancey Gill, of the Smithsonian staff.

Miss Martha L. Loomis generously presented a collection of 594 photographic prints, from various sources, including 94 from her own negatives, and 35 photographs of wild flowers.

A beautiful cabinet stereoscope and 12 stereoscopic pictures were donated by Ernest R. Glascock. This is valuable historically, as it was patented in 1837, two years before photography was announced. The stereoscopic collection was brought up to date by the gift from Philip Brigandi, of the Keystone View Co., of a very modern stereoscope and four prints.

A glass mirror screen, for motion picture projection, was presented by the Motion Picture Producers & Distributors of America (Inc.). This screen was invented by Frank J. Rembusch, of Shelbyville, Ind., in October, 1909, and was a great improvement in the projection of motion pictures.

Charles Abel, editor of Abel's Photographic Weekly, contributed a piece of music by Adolph Baumbach, an "Inauguration March," written for the opening of S. M. Fassett's photographic gallery in Chicago, Ill., in 1865, on which occasion it was played by the Great Western Band.

The value of the pictorial collection was enhanced during the year by the addition of 38 prints. Nineteen pictorial prints, the work of Charles Booz, of Buffalo, N. Y., were the gift of the American Photographic Publishing Co., through F. R. Fraprie. Mr. Booz was a well-known pictorialist and belonged to the Photo Pictorialists of Buffalo. Three of his prints were reproduced in Pictorial Landscape Photography, a volume published by the society. J. Harry Ratcliffe again remembered the Museum with seven specimens of his work. Historical subjects make a strong appeal to him. As a result of an exhibition here of his work, A. F. Kales, a leading worker in America in the bromoil transfer method, presented six

of his wonderful transfers. Richard N. Speaight, the well-known portrait artist of London, upon the occasion of his visit to the United States early in 1929 to exhibit a large collection of portraits by European artists, gave the Museum six prints representative of his own work.

Valued assistance in the work of the section came, as heretofore, from Floyd Vail, and from Frank V. Chambers, editor of the Camera.

A. B. Stebbins, of Canisteo, N. Y., generously donated his large and unusual collection of books and magazines on photography, the accumulation of 50 years. This will be of great value to the library of the section of photography. As it arrived at the close of the year, it has been examined as yet only superficially.

History.—In the division of history 6,282 specimens were received during the year, only about one-fourth as many as during 1928. This was to be expected, since, as mentioned earlier in this report, the efforts of the staff in this division have this year been largely concerned in the general reorganization of the military collections.

The most notable accession received was a silk dress worn by Mrs. Martha Washington. This dress was in the Museum from 1912 to 1924 as a loan from Miss Sallie P. MacKenzie, during which period it attracted much attention as the first dress in the series of dresses of the mistresses of the White House. In June, 1929, this dress was returned to the Museum as a permanent loan by Mrs. Morris Whitridge, in memory of her sister, Miss Sallie Pinkerton MacKenzie. It has again been installed as the first dress in the presidential series. A silk dress of the period 1923–1926 worn by Mrs. Anthony Wayne Cook when president general of the National Society of Daughters of the American Revolution was donated by Mrs. Cook.

To the antiquarian collection was added a snuffbox owned by William Pinkney when ambassador to Great Britain, 1807–1811, lent by Miss Helena S. Pinkney. A silver goblet presented to Hon. Samuel Lilly by a few friends on the occasion of his departure on January 22, 1861, for Calcutta as consul general to British India, and a silver pitcher and salver presented to him on July 4, 1862, by American merchants resident in Calcutta as a token of regard and acknowledgment of the creditable manner with which he had upheld the dignity of the office and executed the duties of consul general of the United States of America in British India, were given to the Museum by his son, William Lilly.

Numerous additions were made to the military collections, one of the most important of which was a collection of uniforms, swords, and other military equipment owned and used by Maj. Gen. Leonard Wood, United States Army, during the period 1898–1921. These

interesting mementoes of General Wood's military career were presented to the National Museum by Mrs. Leonard Wood. A saber of German make carried during the Civil War by Col. Silas Colgrove, Twenty-seventh Indiana Infantry, was bequeathed to the Museum by the late John Bresnahan. A cavalry saber presented by Gen. Philip H. Sheridan to George M. Church of the Second Massachusetts Cavalry was donated to the Museum by the latter's widow, Mrs. Mary E. Church. A set of six very handsome silk flags comprising the headquarters' flag of the United States Army ambulance service and national flags of the United States, Belgium, France, Great Britain, and Italy, which were used by the United States Army ambulance service during the World War, were presented to the Museum by the Rev. W. E. Brooks. A replica of the Clarke machine gunners' trophy, designed by Hans Schuler, was presented to the Museum by George M. Gillet, jr. A model of a 60-inch searchlight and power unit of the type used during the World War was transferred from the War Department.

Other acquisitions of this period included a donation from Ernest Peixotto of a group of nine war landscapes painted by him just after the war from sketches made at the front while he was an official artist for the War Department with the American Expeditionary Forces. Mention should also be made of a gift from Mrs. Jesse H. Metcalf of a German gas mask.

To the naval collections was added a model of the schooner *Hannah*, of Marblehead, which was the first armed vessel to sail at public expense during the War of the Revolution. Commanded by Capt. Nicholson Broughton, the *Hannah* sailed from Beverly, Mass., September 5, 1777, and on September 7 captured the British ship *Unity*. This model was presented to the Museum by William Broughton Allbright. To the naval collection was also added a sword, a chapeau, and a pair of epaulets owned during the Civil War by Medical Director Ninian Pinkney, United States Navy, and lent to the Museum by Miss Helena S. Pinkney. A chapeau and epaulets owned by Capt. Charles V. Gridley, United States Navy, were donated by his daughters, Mrs. Katherine G. Buddy and Mrs. Ruth G. Thomas.

Through the cooperation of the American Numismatic Association numerous valuable additions were made to the numismatic collection as loans from that association. The 133 specimens received include a number of interesting German coins of the sixteenth century and recent coins issued by the following countries: Austria, Czechoslovakia, Estonia, Germany, Hedjas, Indo-China, Irish Free State, Italy, Yugoslavia, Latvia, Libau, Lithuania, Netherlands, Nicaragua, Norway, Palestine, Persia, Poland, Portugal, Russia, Spain, Sweden, and Turkey.

The Bureau of the Mint, United States Treasury Department, continued its cooperation in the upbuilding of the national collections by transferring 85 coins, including 2 coins of each denomination struck by the United States mints in 1928, a set of the new coins of the Irish Free State, and other specimens specially selected to fill gaps in existing series. Boris E. Skvirsky donated a series of coins of the Soviet Union; and other contributors of coins and paper currency included Gerald D. Bliss, jr., Miss Thyra Fredriksen, William Lilly, Mrs. Helen Heinze Schaer, and the Territorial government of Hawaii.

The philatelic collection was increased by 5,775 specimens, of which 5,169 were received from the International Bureau of the Universal Postal Union at Berne, Switzerland, by the Post Office Department and transferred by that department to the Museum. The other 606 specimens were precanceled stamps donated by the Precancel Stamp Society.

INSTALLATION AND PRESERVATION OF COLLECTIONS

The year was, as heretofore intimated, one of great activity in the line of rearrangement of the collections in the Arts and Industries Building.

Mineral and mechanical technology.—The attention of the staff in the divisions of mineral and mechanical technology for three-fourths of the year was mainly required by the section of metrology, including weights and measures, surveying, and horolgy. These collections had been moved from the main floor of the Museum to the west south range gallery during the last quarter of the preceding year, but their proper installation was delayed until more constant attention could be given to the work. The collections may now be said to be in very good condition and simply await receipt of permanent descriptive labels, which are in press.

The last quarter of the year was consumed in moving the exhibits contained in the west hall of the Arts and Industries Building to the west south range. As the exhibits included three large models on gold mining, iron mining, and copper mining, a large amount of work was involved. The move was successfully consummated before the close of the year.

Aside from these major activities, the preparatorial staff was constantly engaged in the maintenance of the many operative exhibits and the cleaning and repairing of many individual fixed exhibits. Data for approximately 500 descriptive labels were prepared for the printer, and at the end of the year over one-half of the labels had been received, framed when necessary, and installed.

The very last days of the year witnessed the clearing of the east north range of the Arts and Industries Building, where it is proposed to build up the exhibit illustrating "Mechanical Power." The laces and other art textiles formerly displayed in this space were transferred with their cases to the west north range, ground floor, of the Natural History Building.

Textiles, foods, organic chemistry, wood technology, and medicine.—Twenty-three installations of new exhibits or rearrangement of exhibits already on view were made in the textile halls during the year. The most important were nine cases showing the development of the sewing machine, and five cases devoted to rayon. New exhibits were planned to illustrate methods of ornamentation of upholstery pile fabrics and the latest developments in the use of rayon.

In the section of foods, a new type of installation was devised for the large observation beehive by which the bees were induced to construct their wax combs in plain view of the visitor. The upper story of the hive, or "super," was replaced by a glass dome about 17 inches in diameter at the base. Inside, at the top of the dome, were fastened a few pieces of wax-comb foundation and the bees were permitted access to the dome through two large holes in the board between the main hive and the dome. The result was that within five weeks nearly 40 pounds of honey were stored inside the dome on top of the hive, practically filling it.

A beginning was made in the matter of exhibits to illustrate the history of agriculture by five new installations of original patent models of important agricultural implements, in cases formerly occupied by foodstuffs. It is believed that the implement models will be of more interest at the present time.

Eighteen new or rearranged installations were made in the section of organic chemistry. Of these the most instructive were the five cases showing how shoes are made by machinery, and in the rubber section the material illustrating American-grown rubber. These exhibits have attracted much attention.

In the wood court many needed changes in the installation were made possible by the return to the Department of Agriculture of the large national forest model, which had long served as the centerpiece of the court, and the setting up of a series of upright exhibit cases to display the Rudolph Block collection of walking sticks. The installation of this collection of fine woods of the world, turned in the form of canes to bring out the beauties and varieties of color and figure, required the entire time of the assistant curator and one preparator for several months. The finished exhibit presents 14 cases with 50 canes mounted on each side of a diaphragm, making 1,400 in all, and each individually labeled as to source and species

of wood. Another new exhibit placed on display was that showing archery materials and the methods of constructing bows and arrows of various types. Seventeen wood samples were prepared for the study collection and 1,516 wood specimens were made available for distribution and exchange.

In the division of medicine 24 new and 17 rearranged installations were made during the year, the most important of the new installations being the hospital exhibit for which an especially constructed framework was made. During the year a plan was drawn up for a collection pertaining to the history of pharmacy. The first exhibit of the series was made in the Museum laboratory and installed at the beginning of the pharmaceutical collection. The classification of the materia medica collection, which had occupied attention for three years when other duties permitted, was completed, new general labels and specimen labels having been provided this year.

A special effort was made to improve the appearance of the exhibition halls by securing replacements of all specimens showing evidences of deterioration due primarily to the effects of light. In many instances the replaced specimens have been returned to the donors for a study of these light-induced changes. Practically all of the collections of the division of medicine deteriorate rapidly unless they receive constant care. Consequently, efforts are made at all times to extend the length of usefulness of specimens by preserving solutions, insecticides and protection from heat and light. Constant replacements are nevertheless necessary.

Graphic arts, including photography.—Less work was done on the permanent graphic arts collections this fiscal year than customary, as the curator was largely occupied in assisting the National Gallery of Art in bringing together and installing a special exhibition of the work of Edward Greene Malbone, held in the gallery from February 23 to April 21, 1929. The usual number of special loan exhibitions was, however, installed in the division of graphic arts. To the permanent exhibition of the division was added the series of silk-stencil printing received from H. E. Jones & Sons (Inc.). This shows the steps in the actual printing from the second printing to the ninth, which completes the print in color. The newspaper printed on paper made from the fiber of cornstalks, as marking an event in paper making, was likewise placed on exhibition. The technical exhibit of Pantone Process installed in 1928 was replaced by the more complete material received this year. Several old exhibits were rematted and newly labeled. The monotype printing and the Wales lithograph exhibit were reinstalled. The Patent Office models were moved and arranged to better advantage, but time has yet not been found to study the series. In the section of photography the

most important change was the placing of the Fox Talbot material on exhibition.

Of the special loan exhibitions arranged by the division of graphic arts during the year, those held in the Smithsonian Building were as follows:

July 1 to 31, 1928: 140 early American bookplates, exhibited through the courtesy of their owner, Arthur L. Stearns.

August 1 to 28: 50 prints of the year, assembled and displayed through the courtesy of the American Institute of Graphic Arts. This contained 25 conservative prints and an equal number of modern prints.

October 1 to 28: 62 etchings by Charles H. Woodbury.

October 29 to November 25: 41 etchings by Carl Strauss.

November 26 to December 30: 41 dry points and etchings of children, by Margery Austen Ryerson.

December 31, 1928, to January 27, 1929: 52 etchings, drawings, and lithographs by George C. Wales.

January 28 to February 24: 45 etchings—portraits, landscapes, and animals—by Anne Goldthwaite.

February 25 to March 24: 45 etchings by Charles E. Heil.

March 25 to April 21: 50 etchings of children by Vernon Thomas (Mrs. Earle Rosslyn Kirkbride).

April 21 to May 19: 50 dry points by Carton Moorepark.

May 19 to July 1: 37 dry points by Warren Davis, a memorial exhibition arranged through the courtesy of Francis H. Robertson (Inc.).

The special loan exhibitions held in the photographic gallery in the Arts and Industries Building were as follows:

July 1 to 31, 1928: 103 pictorial prints by members of the Cleveland Photographic Society (Inc.).

September 22 to 29: 532 portraits of scientific men, by Julian P. Scott.

November and December: 51 photographic portraits and figure studies by Angus Basil of London, England.

December 1 to December 25: 220 prints, the pictorial section of the seventy-third exhibit of the Royal Photographic Society of Great Britain, exhibited through the courtesy of Joseph M. Bing.

January and February, 1929: 45 prints, portrait and pictorial, by George J. Hughes, F. R. P. S., Bridge of Allan, Scotland. Nearly all of these had won honors in various parts of the world.

March and April: 76 pictorial and figure studies by Arthur J. Lomax, F. R. P. S,. of Cardiff, Wales.

May: 70 pictorial photographs, being the 1929 annual of the Cleveland Photographic Society (Inc.).

June: 66 pictorial prints by Dr. Max Thorek. Doctor Thorek was awarded the Salon trophy cup by the Associated Camera Clubs of America for having the largest number of prints accepted and hung in exhibitions in the United States and Canada during the past year.

History.—The outstanding event of the year in connection with the collections of the division of history was the transfer of the military material of the World War period from the Natural History Building to the Arts and Industries Building.

This collection procured largely from the various bureaus of the War Department and the Navy Department and representing many varied features of the activities of those departments, was necessarily installed in widely separated halls located on different floors of the Natural History Building, with one very important unit in the Arts and Industries Building on the other side of the Smithsonian Park.

The War Department, in 1928, expressed a renewed interest in the collection which, after discussion with the head of the Museum, led to the appointment of Maj. Louis A. O'Donnell, United States Army, to prepare for approval a plan for the reorganization of the military exhibits in the National Museum. Major O'Donnell was assigned an office in the Arts and Industries Building and was extended every facility in this task by the curator of history and his staff. On September 28, 1928, the War Department announced an advisory committee to assist Major O'Donnell, by consultation and cooperation, as follows: Lieut. Col. Harry B. Jordan, General Staff Corps; Lieut. Col. Paul D. Bunker, Coast Artillery Corps; Maj. John W. Lang, Infantry; Maj. Marion O. French, General Staff Corps; and Capt. Edwin M. Scott, Quartermaster Corps.

An inventory was taken of objects composing the military display in the Museum, and their value as exhibits was carefully estimated. Plans were then devised by Major O'Donnell, and approved by Assistant Secretary Wetmore, for (1) the return to the War Department of certain military materials no longer needed for exhibition, (2) the establishment of an artillery park on ground belonging to the Smithsonian Institution, (3) the concentration of all military collections in the Arts and Industries Building, and (4) the building up of those collections along definite lines. As a result the World War collections were disassembled, the naval and Marine Corps material of that period remaining in the Natural History Building and the military material being removed to the Arts and Industries Building and joined to the main collections of the division of history. The World War collection represented such an extremely important period of American history and contained material of such exceptional historical significance that its separation and reinstallation in a different form in a new location is of great moment.

With the approval of the officer in charge of Public Buildings and Public Parks of the National Capital, the lawn between the Aircraft Building and the Smithsonian Building was set aside for exhibition purposes as an artillery park. The guns and other pieces of artillery which had been displayed outdoors against the west wall of the Arts and Industries Building, were repainted and moved to the

new location. The ordnance material which had been shown in the rotunda of the Arts and Industries Building since 1919 was likewise placed in the park, vacating inside space for more perishable specimens. In further preparation for the establishment of the military display in the Arts and Industries Building, all models belonging to the divisions of mineral and mechanical technology were removed from the west hall, the radiators in the hall were relocated to give more wall space, and the seats were removed from the eight piers around the rotunda, permitting a high wall case to be installed against each pier.

The actual process of transferring the military collections from one building to the other began about April 1, 1929, and the magnitude of the task can only be indicated vaguely by the fact that two ranges, the foyer, and three adjoining rooms, all on the ground floor of the Natural History Building, were vacated, aggregating 22,000 square feet of floor space. In this area had been installed 58 floor cases, 14 wall cases, besides some 200 linear feet of wall cases. All these cases were filled to overflowing with exhibition material, and many of the wooden bases upon which they were mounted were also filled with storage material of various kinds. Still other objects were exhibited without cases. In addition, pictorial material belonging to the World War collection, comprising some 700 original drawings and paintings, was removed from the walls of the Natural History Building to the older building. The War Department detailed five enlisted men and assigned a truck to assist in the transfer of this material. The greater part of the work was accomplished by the staff of the division of history with the Museum labor force. At the end of the year all the military material was safely housed in the Arts and Industries Building. Forty floor cases had been transferred to the west hall of the Arts and Industries Building, and against the north wall of this hall were placed seven wall cases and against the south wall five alcove cases. The entire staff of the division of history was, on June 30, 1929, endeavoring to make a presentable, if only temporary, installation of military material in this hall and the adjoining rotunda.

A review of the work accomplished during the period of Major O'Donnell's assignment in the Museum is given in this report as a due acknowledgment for the great service which he has rendered during his connection with the Museum. The most important results thus far of his mission have been the following: The assignment of the west hall, the gallery of the west hall, and the rotunda for the military collections lent to the Museum by the War Department; the transfer of all military material from the Natural History Building to the Arts and Industries Building; the return of the more

technical military material to the War Department; the removal of the ordnance material from the rotunda of the Arts and Industries Building and its installation in the park to the west of the Arts and Industries Building. These are all concrete transactions of tremendous value to the work of the division of history.

Major O'Donnell was succeeded as the representative of the War Department in connection with the rearrangement of the military material by Lieut. Col. Arthur Hixson, United States Army, on June 15, 1929.

The benefits which have already accrued from the relocation of the military material have extended to the historical collections generally. The collections in the north hall, which had long been in need of reinstallation and reclassification, were reinstalled. The case on the south wall containing the United States and eight large foreign national flags was moved to the center of the south wall of the adjoining numismatic hall, where it adds a note of color. Along the south wall of the north hall were then placed four tall walnut cases, in which it is proposed to display the F. W. Dickens collection of historical chinaware which has long been exhibited on the west hall gallery.

The antiquarian material formerly shown on the east side of the north hall was transferred to the northwest court. The cases thus vacated have been installed with military and naval material. The floor space in the north hall is now almost entirely devoted to military and naval material of a personal character. The northwest court has been constituted an antiquarian unit, and the Richard Mansfield collection of historical theatrical costumes will be installed as an important part of the exhibits there.

The period costume hall was the only hall containing historical material which was not affected by the transfer of the military collections. The congested condition of this hall was increased late in June by the addition of another large case, on the east side of the hall, to accomodate a dress recently returned to the Museum which was worn by Martha Washington during the administration of her husband. This dress has again become the initial item in the series of costumes of the mistresses of the White House, one of the most popular exhibits in the Museum.

Until a new building is provided for the historical collections, the Museum is unable to alleviate exhibition conditions which everyone recognizes as far from what could be desired.

INVESTIGATION AND RESEARCH

Research by members of the staff.—Research by members of the staff of the divisions of mineral and mechanical technology, con-

stantly in progress, concerns mainly the history of invention and of industrial developments, and is undertaken primarily to provide accurate information with which to design exhibits. An insufficient staff does not permit any single member to devote more than a small part of his time to research, with the result that there are many delays in the acquisition of complete data so much desired.

The curator of textiles gave much time to a critical examination of certain groups of the patent models transferred from the Patent Office. These studies covered the history and development of the sewing machine, fundamental loom motions, and early types of shoemaking machinery, and were made primarily for the purpose of determining which of the models should be permanently retained in the collections to represent only the most important and epoch-making inventions. Manuscript of a paper on the history of the sewing machine has been prepared for publication. The study of the genus *Gossypium* and other genera related to the cotton plant, begun some time ago by the curator, was continued during the year.

The classification of the vegetable drugs, which has been receiving the attention of the assistant curator of medicine for several years, was completed. The results of last year's study of electricity as a therapeutic agent were published. New researches were undertaken toward developing exhibits pertaining to the early history of pharmacy; the evolution of pharmacopoeias, dispensatories, and formularies; the history of drugs; the part which flies and mosquitoes take in disease transmission; and the history of surgical sutures. As a result an exhibit outlining the early history of pharmacy has been added to the collections, and material has been collected and labels prepared for an exhibit illustrating the evolution of pharmacopoeias, dispensatories, and formularies which will be installed early next year. A model arranged to show how insect-borne diseases are spread and prevented is now in the course of preparation. Research relative to the development of diagnostic methods, which was begun last year, was continued.

The assistant curator of wood technology made a careful microscopic study of about 100 samples of Japanese woods and almost completed the classification of another similar set. He continued the study of unclassified scattered woods in the collection, which, as identified, were incorporated in the botanical index. The woods used in the arrows in the archery exhibit were identified in order to enable makers to duplicate the species, if desired.

In the division of graphic arts, research work was much more extensive than usual, although every exhibit involves a certain amount of study. Investigations this year were chiefly for the benefit of the National Gallery of Art and had to do with searching out, identifying, and installing miniatures for the Edward Greene Mal-

bone exhibition. Four miniatures, painted by Malbone in 1795, brought to light in this work, are the earliest known examples of his painting, and 28 miniatures by this artist were exhibited which were not on any previously published list. The Malbone exhibition was a great success, both as an exhibit of his work and because of the information obtained as to miniatures by him and by other artists. Investigations are being continued with the view to the publication of an authentic list of miniatures by this artist.

In the division of history the routine work has been so heavy as to leave little time this year for research. The curator has, however, continued his study concerning the development of the American sword as opportunity permitted and has assembled much interesting data for his monograph on the subject. The assistant curator likewise carried forward investigations on the history of firearms for the proposed printed catalogue of those specimens in the Museum.

Research of outside investigators aided by Museum material.—The divisions of mineral and mechanical technology assisted the Pennsylvania Railroad Co. during the year by furnishing data for the construction of a full-size reproduction of John Stevens's locomotive of 1825. The Museum collections include the original boiler and safety valve of this historic locomotive, together with much descriptive data, all of which was made use of by two draughtsmen of the railroad company to make working drawings. The reproduction was completed and first exhibited, operating under its own steam, on the occasion of the inauguration of President Davis, of Stevens Institute of Technology, at Hoboken, N. J., in November, 1928.

The collection of automobiles was studied by a member of the staff of the National Automobile Chamber of Commerce, as part of an investigation being made on the history of the invention of the electric automobile starter.

The collection on water craft was studied carefully by a member of the Museum of Science and Industry, of Chicago, as a preliminary undertaking in the planning of a water transportation section for this newer institution.

The division of textiles aided a representative of Fales & Jenks Machine Co., Pawtucket, R. I., who spent some time at the Museum studying and making drawings of the old textile machine which gins, cards, and spins cotton. Specimens of casein and pyroxylin plastics in sheet form were supplied to the Department of Agriculture for experimentation as to the suitability of these materials for permanent outdoor plant labels.

W. O. Robinson, of the Bureau of Chemistry and Soils, was assisted in his research on the suitability of various woods for arrow footings. The sceintific research of L. Bordages, counsellor at the Court of Appeals, Amiens, France, was aided by samples of woods of

the United States. Wood specimens of palo cuate and narra were sent to Ellerton A. Canfield, of Los Angeles, Calif., in connection with his studies on the fluorescence of their extracts. E. E. Green, engineering section, Department of Commerce, examined the collection while engaged in a study of the properties of dagame and other woods used for archery bows. F. L. Wagner and J. A. Scott, of Frank L. Wagner (Inc.), of Washington, D. C., were aided in their research on a process which would transfer, by photography, the grain of one wood to another.

A. C. Titus, of Newport, Vt., made use of specimens of ginseng from the collections, and also utilized the sectional library. B. A. Gray and a class of students from Howard University Medical College, Washington, D. C., conducted certain researches at the Museum, using Museum specimens of salicylic acid and salicylates. They were supplied with required references and otherwise assisted in their work.

In the division of graphic arts the greater percentage of inquiries related to artistic objects, such as oil paintings and miniatures. In connection with the Malbone exhibition fully 50 miniatures supposed by their owners to have been painted by Malbone were definitely identified at the Museum as not by that artist. In this regard it might be stated that of 130 miniatures sent or brought to the gallery, all the authorities agreed some 80 were by Malbone and about 50 were by other artists. Some of these latter were found upon investigation to be signed and others were by other means definitely identified as to the artist.

Assistance by members of the staff to Government bureaus and individuals.—Much of this work is done in the regular course of correspondence, and it is only occasionally that the object is sent to the Museum. The work of the divisions of mineral and mechanical technology in the identification of material is of many sorts, but is concerned chiefly with the determination of the age of watches and clocks and of hand and machine tools. Visitors frequently bring material directly to the office for identification. As an instance of this, the curator was called upon on one occasion during the year to determine for the board of governors of Mount Vernon, the authenticity of a watch said to have been given by General Washington to his wife, and which was being offered for sale to the board.

The national committee on wood utilization of the Department of Commerce requested and received 120 hand samples of woods from Central and South America, Mexico, West Indies, Philippine Islands, and Africa. The curator of textiles and assistant curators of wood technology and medicine furnished special information on industrial raw materials and the identification of specimens to several bureaus of the Government and to numerous individuals. Aid in planning

displays, making suggestions for models, and the identification of fibers and fabrics, gums, resins, seeds, and woods for individuals both in and out of Government service continued to be a part of their regular work. The curator of textiles, as heretofore, furnished the identification of cottons and cottonseeds introduced by the office of foreign plant introduction, United States Department of Agriculture, and to him were referred letters requesting information on silk and artificial silk received from various Federal departments. Five lots of material were received for identification and report.

The division of history received 60 lots of material for identification during the year, on which reports were duly made.

Visits to other institutions on official work.—C. W. Mitman, curator of mineral and mechanical technology, represented the Smithsonian Institution at the inauguration of President Davis, of Stevens Institute of Technology, at Hoboken, N. J., November 22 and 23, 1928, at the international civil aeronautical conference held in Washington, D. C., December 12 to 18, 1928, and on May 21, 1929, in New York, at the luncheon and unveiling ceremonies on the occasion of the presentation of the transatlantic airplane *Bremen* to the city of New York. This was the gift of the late Baron von Hunefeld, sponsor of the flight. The ceremonies took place in the Hotel Commodore and the Grand Central Terminal, where the airplane is now temporarily exhibited. Later he attended the annual meeting of the American Association of Museums held in Philadelphia May 22 to 24.

Frank A. Taylor, assistant curator of mineral and mechanical technology, attended the national power show held in New York City in December, 1928. Many facts useful in the work of the Museum, particularly for the proposed power exhibit, were obtained and several tentative exhibits surveyed.

F. L. Lewton, curator of textiles, visited the plant of the Singer Manufacturing Co. at Bridgeport, Conn., to procure early models in the development of the sewing machine. He also devoted several days to a study of technical exhibits, labels, etc., of several museums in Philadelphia, Pa. The assistant curator of medicine, Dr. Charles Whitebread, visited Elizabeth, N. J., and Brooklyn, N. Y., to inspect work on a model being constructed by Col. J. H. Dudley at the former place, and to confer with Davis & Geck (Inc.), of Brooklyn, as to an exhibit to illustrate various phases of the surgical suture industry. The aid in organic chemistry, Miss Aida M. Doyle, attended the Chemical Industries Exhibition held in the Grand Central Palace, New York City, in May, 1929, to study methods in chemical industries.

Dr. A. J. Olmsted, custodian of the section of photography, near the end of the year visited Yonkers, N. Y., to inspect the photographic collections of Rudolf Eickemeyer. Mr. Eickemeyer has generously tendered the Museum his entire collection of prize-winning

pictorial photographs (about 100, all uniformly framed) with their medals and trophies; also prints of all his other work, and his library, the accumulation of a lifetime. Every known printing process is represented in the framed series and in the 60 volumes of prints is represented every class of pictorial photography, the portraits being particularly interesting in distinguished men of affairs, women of New York society, and the English nobility. All this material will be shipped to the Museum in the autumn, and the prospects are bright for the future growth of the photographic collections of the Museum.

T. T. Belote, curator of history, visited Chicago, Ill., in October, 1928, for the purpose of studying the Virgil M. Brand collection of coins of the world. He spent a few days in New York City, in June, 1929, studying the collection of American swords in the Metropolitan Museum of Art and consulting publications in its library, which are not available in Washington.

DISTRIBUTION AND EXCHANGE OF SPECIMENS

The collections of the department of arts and industries and the division of history are used not only by the scientists and research workers of Washington, but they serve also a wider field. During the year an aggregate of 6,538 specimens from the department of arts and industries and the division of history was sent out, as follows: 5,979 as loans for study or for exhibition, as in the case of the traveling exhibits; 359 specimens as exchanges for which an equivalent has been or will be received; 123 specimens as transfers to other departments of the Government; and 77 specimens as gifts to educational institutions. In addition, several thousand specimens which had been in the National Museum as loans were returned to their owners during the year.

NUMBER OF SPECIMENS UNDER DEPARTMENT

The total number of specimens in the department of arts and industries and the division of history on June 30, 1929, was 488,678, assigned as follows:

Mineral technology	3,949
Mechanical technology	7,699
Textiles	11,764
Wood technology	7,712
Organic chemistry	18,417
Foods	1,146
Medicine	14,920
Graphic arts, including photography	31,295
Loeb collection of chemical types	1,195
History	390,581
	488,678

LIST OF ACCESSIONS TO THE COLLECTIONS DURING THE FISCAL YEAR 1928–29

[EXCEPT WHEN OTHERWISE INDICATED, THE SPECIMENS WERE PRESENTED OR WERE TRANSFERRED BY BUREAUS OF THE GOVERNMENT IN ACCORDANCE WITH LAW]

ABBOTT LABORATORIES, THE, Chicago, Ill.: Specimen of chemical for the Loeb collection of chemical types (106100).

ABBOTT, Dr. WILLIAM L., Northeast, Md.: Collection of natural history material, comprising mammals, bird skins and skeletons, reptiles, batrachians, marine invertebrates, mollusks, fishes, insects; also ethnological and anthropological material collected by A. J. Poole and W. M. Perrygo in Haiti (103904); 69 mammals, including 5 alcoholic bats, from Siam, collected by Dr. C. Boden Kloss (105348). (See also under Smithsonian Institution, National Museum, collected by members of the staff, with E. C. Leonard.)

ABEL, CHARLES, Cleveland, Ohio: Copy of "Inauguration March," written for the opening of Fassett's photographic gallery, Chicago, Ill., in 1865 (104485).

ACADEMY OF NATURAL SCIENCES, Philadelphia, Pa.: 2 specimens of minerals—metavauxite and chromrutile; skin of a bird (goatsucker) from Haiti; 133 specimens of grasses collected by Mr. Edwin B. Bartram (103137; 103776; 106082, exchange); 4 flies (103161).

ADAMS, Dr. C. F. Indianapolis, Ind.: 13 specimens of flies (105268, exchange).

ADAMS, Mr. and Mrs. JOHN D., Woodlea, Bay Shore, Long Island, N. Y. (through Dr. George S. King). Simplex automobile (104418).

AGRICULTURE, DEPARTMENT OF:

Bureau of Animal Industry. (See under H. L. van Valkenberg. Mayaguez, P. R.)

AGRICULTURE, DEPARTMENT OF—Continued.

Bureau of Biological Survey: 2 nests and 14 eggs from North Carolina and Texas (102128); group of sand calcite crystals collected by A. P. Chambers in the Bad Lands, S. Dak. (102238); 269 Alaskan plants (102280); skin and 2 skulls of the European beaver from Norway (102576); 2,162 specimens, representing 236 species, of determined insects belonging to the Orders Coleoptera, Diptera, Hemiptera, Hymenoptera, Lepidoptera, and Orthoptera (102605); 6 snakes from Louisiana (102655); (through E. A. Goldman) 2 specimens of ferns (102663); (through Dr. Walter P. Taylor) 2 skeletons and 1 specimen in alcohol of the Arizona Pyrrhuloxia, a bird (102992, 104268); 4 young mourning doves (alcoholic specimens) (103127); laughing gull and specimen of Forster's tern from Hains Point, D. C. (103155); 219 plants from Wyoming (104000); 7 lizards, 4 snakes, and 1 toad from the United States (104206); 58 plants from the District of Columbia and vicinity (104406); (through W. L. McAtee) 19 plants collected in Ontario by Mr. McAtee (104423); 2 large headdresses, 3 small headdresses, and 6 headdress ornaments, all Chinese (104671); 318 plants from the United States and Alaska (105016);

AGRICULTURE, DEPT. OF—Contd.

Bureau of Biological Survey—Contd. Chinese bride hat and 3 breastpins made in part of feathers from the kingfisher and seized by the collector of customs at El Paso, Tex. (105561); 3 plants from Texas, collected by H. Vernon Bailey (105700); 439 mammals transferred by the Survey to the National Museum (106097). (See also under Mrs. A. B. Coffin.)

Bureau of Entomology: 2 slugs from Germany (102787); 18 insects (12 flies, 6 parasites), received from C. N. Ainslie, Sioux City, Iowa (103505); (through Mr. Fenner Stickney) 10 specimens of larva (104269); mollusk from Cuba (104500); (through Dr. L. O. Howard, principal entomologist) trapdoor spider's nest (104852); 30 specimens, 2 species, of land mollusks from tobacco beds in Chadbourn, N. C. (105149); (through C. W. Collins, Melrose Highlands, Mass.), 3 flies (104692); (through Japanese Beetle Laboratory, Moorestown, N. J.), 2117 specimens of Asiatic and oriental wasps, representing 40 species, 2,013 of which are type material; 376 undetermined specimens of aculeate Hymenoptera (105266, 105550); 4 mollusks from Venezuela (105420); tree frog from Florida (105679); 9791 miscellaneous insects (106092). (See also under R. C. Lange and J. Rellis Cally.)

Bureau of Plant Industry: 19 specimens of land shells from Kuala Lumpur, Malay (101892); (through Dr. C. R. Ball) 16 specimens of willows from North Dakota and Minnesota, collected by Doctor Ball; plant from Michigan (102180, 104412); 89 plants from the United States (102262, 104213); plant from Massachusetts (102281); (through Dr. A. S. Hitchcock) 4 plants collected in Honduras by G. Kenyon; 333 Haitian plants collected by Dr. E. L. Ekman; 6 plants from Mexico; 94 plants from Labrador (102900, 103860, 104401, 104839); (through Dr. Frederick V. Coville) plant from New Jersey (103359); (through Dr. T. H. Kearney) 409 plants from Arizona; specimen and 7 photographs of plants; 3 plants from the western United States and an enlarged photograph (103363, 103654, 104400, 104229, 104399, 105552, 106032); (through P. L. Ricker) plant from the District of Columbia (103763); (through Dr. S. F. Blake) plant from Georgia; fern from New Caledonia; 2 plants; 77 photographs, 98 fragmentary plants, largely types; plant from California (104515, 104870, 105255, 105381, 105387); (through G. F. Gravatt) 7 wood specimens collected in Japan by Prof. R. K. Beattie of the office of forest pathology (105245); (through Dr. Walter T. Swingle) 2 specimens of a Chinese shrub, a new genus and new species (105386); 4067 specimens of mounted grasses (106075). (See also under William C. Ferguson.)

Forest Service (through E. N. Munns, forester): Fragmentary specimen of pine from New Mexico (105877); (through J. M. Wyckoff, forest ranger): 12 valves of fossil shells (102147).

Plant Quarantine and Control Administration: 3 snails and 4 isopods (101851); slug from Savannah, Ga. (101991); 3 isopods and a snail (102143); 3 specimens, 2 species, of slugs from Oregon, and 6 isopods (102220); 3 specimens, 2 species, of land mollusks from Japan and Germany (102932); 2

AGRICULTURE, DEPT. OF—Contd.
Plant Quarantine and Control Administration—Contd.
land mollusks from Germany and Japan (104155); 2 land mollusks from Japan and Holland (103379); lizard from Jamaica (103383); land shell belonging to the family Helicidae, from Ireland, and an isopod from Honduras (103983); slug from England (104207); approximately 50 land mollusks from Europe, and 9 specimens, 2 species, of isopods from Switzerland (104440); fresh-water mollusk and 14 land mollusks (105350); 19 specimens, 3 species, of land shells from Pennsylvania and Germany (105431); 2 land shells from Germany (105692); tree frog from Cuba (105845). Exchange.

ALABAMA, UNIVERSITY OF, University, Ala. (through Prof. William E. White): Glowworm, or female beetle (105592).

ALBANIAN VOCATIONAL SCHOOL, THE, Tirana, Albania (through Mr. Harry T. Fultz): 63 Albanian butterflies (102766).

ALBIN, H. C., Washington, D. C.: Milk snake collected at Cherrydale, Va. (102799).

ALEXANDER, Dr. C. P., Amherst, Mass.: 48 insects from Japan; 1,041 miscellaneous insects from New York, Vermont, and Massachusetts, including a number of rare species (105134, 105993).

ALFARO, Señor DON ANASTASIO, San Jose, Costa Rica, Central America: 100 fishes, 6 worms and insects (102252).

ALFRED, Captain A. R., Medical Corps, United States Navy, Anapolis, Md. (through Capt. Charles S. Butler (M. C.), United States Navy, commanding United States Naval School, Washington, D. C.): 3 fruit bats from the island of Guam (105030).

ALLARD, H. A., Clarendon, Va.: 3 screech owls from Virginia (105394).

ALLBRIGHT, WILLIAM BROUGHTON, Chicago, Ill.: Model of the schooner *Hannah* of Marblehead, commanded during the War of the Revolution by Capt. Nicholson Broughton (104319).

ALLEMAN, CHARLES D., Balboa, Canal Zone: 178 specimens of marine shells from the Pacific coast of Panama (101054, 102701, 103733); 51 marine shells from the Atlantic and Pacific coasts of Panama and from the Aruba Islands (near Curacao) (102162); 7 marine shells from Colon, Panama (102754); 4 marine mollusks from the west coast of Panama (103302).

ALLEN, Mrs. EVA C., Berkeley, Calif.: Photograph of President Abraham Lincoln and 2 photographs of houses in which he resided (102224).

ALLEN, Mrs. LAURA M., Rochester, N. Y.: Samples of cotton and wool coverlet in 4-harness overshot weave; sample of silk jacquard weaving made in 1870, and 40 small printed pictures illustrating spinning, doubling, or winding yarns in various countries (105696).

ALLEN, R. A., Washington, D. C.: Foot warmer from the Colonial period in the United States (103386).

ALPATOV, Dr. W. W. (See under Moscow, Museum of the University of, Moscow, U. S. S. R.)

AMARAL, Dr. A. DO. (See under Instituto Butantan, Sao Paulo, Brazil.)

AMERICAN CONSUL AT CAMPBELLTON, N. B. (See under Emanuel Landry.)

AMERICAN HEART ASSOCIATION (INC.), New York City: Strip film entitled "Young Strong Heart" for use in the automatic delineascope to supplement the heart exhibit of the section of hygiene and sanitation (102771).

AMERICAN HOSPITAL ASSOCIATION, Chicago, Ill. (through Mr. Richard P. Borden, Fall River, Mass.): 85 colored transparencies illustrating the subject of hospitalization (104995).

AMERICAN INSTITUTE OF GRAPHIC ARTS, New York City: "Fifty Prints of the Year" for special exhibition from August 1 to 28, 1928 (102494, loan).

AMERICAN MUSEUM OF NATURAL HISTORY, New York City: Cast of a sperm whale, the original of which was collected in New York Harbor; skin of a chatthrasher from Haiti (104003, 106047, exchange); 4 fossil elephant teeth (105426).

AMERICAN NUMISMATIC ASSOCIATION, THE, New York City (through Mr. Moritz Wormser): Coins of Armenia, England, Germany, Netherlands, Pahang, Poland, Portugal, Spain, and Venice (64 specimens); German, Italian, and Persian coins (6 specimens); coins of Czechoslovakia, Germany, Irish Free State, Jugoslavia, Sweden, and the United States; Austrian two-schilling piece, coined in 1928, and German 3-mark piece and 5-mark pieces coined in 1929; current coins of Italy, Jugoslavia, Libau, Lithuania, Nicaragua, Norway, Palestine, Portugal, Russia, Spain, Sweden, and Turkey; coins of Austria, Estonia, Germany, Hedjas, Indo-China, Latvia, Persia, and Turkey (19 specimens) (94775, 103354, 104041, 104816, 105446, 105871). Loan.

AMERICAN PHOTOGRAPHIC PUBLISHING COMPANY, Boston, Mass.: 19 pictorial exhibition prints by Charles Booz (102032).

AMERICAN RUBBER PRODUCERS (INC.), Salinas, Calif. (through Intercontinental Rubber Co., New York City): Full-grown guayule plant and 3 ounces of guayule seed, produced on plantations in Monterey County, Calif. (103863).

AMERICAN TELEPHONE & TELEGRAPH CO., New York City: Model of a telephone transmitter and receiver, enlarged four times, sectionalized and operative (103327).

AMES, E. A., Tela, Honduras: Monkey skull from Honduras (102919).

AMHERST COLLEGE, Amherst, Mass.: 9 slabs of fossil footprints from the Connecticut Valley (103884, exchange).

AMMAL, Miss E. K. TANAKI, Ann Arbor, Mich.: Plant (103387).

APPEL, W. D. (See under C. R. Shoemaker.)

ARCHAEOLOGICAL SOCIETY OF WASHINGTON, Washington, D. C. (through Dr. George Grant MacCurdy): Archeological material collected in France in 1928 by the American School of Prehistoric Research (103154, loan).

ARCHERS CO., THE, Pinehurst, N. C.: 2 specimens of archery woods (102823) (through W. O. Robinson, West Falls Church, Va.) 21 pieces of archery tackle, including 7 billets of archery woods, 1 fiber-backed tournament yew bow, 1 lemon wood bow with jointed handle, 1 lemon wood bowstave, half-finished, half in the rough, 5 specimens showing arrows in different stages of manufacture, and 6 finished arrows (103973).

ARMITAGE, H. M. (See under Horticultural Commissioner, Los Angeles, Calif.)

ARMOUR & CO., Chicago, Ill.: 43 specimens of organotherapeutic medicines (103075).

ASSOCIATION OLDEST INHABITANTS OF THE DISTRICT OF COLUMBIA, Washington, D. C.: Surveyor's chain supposed to have been used by Andrew Ellicott about 1780 (105243, loan).

AUSTRALIAN MUSEUM, THE, Sydney, New South Wales, Australia (through Mr. Frank A. McNeill): 105 specimens of crustaceans from

AUSTRALIAN MUSEUM, THE—Con. Australia (101755); approximately 985 specimens of Australian decapod crustaceans comprising representatives of 115 species, 85 genera and 25 families (105793). Exchange.

BABASINIAN, Dr. V. S., Bethlehem, Pa.: 2 specimens for the Loeb collection of chemical types (103288).

BAGLEY, E. W., Moyock, N. C.: Piece of the Wright brothers' hangar at Kitty Hawk, N. C., in 1903 (104036).

BAILEY, Dr. L. H., Ithaca, N. Y.: Plant from Florida (104143).

BAILEY, VERNON, Washington, D. C.: Young collared lizard from Arizona (103197).

BAIN, Mrs. H. FOSTER, New York City: Japanese metal mirror, Chinese bronze coin and case, and a repoussée silver charm box from Siam (103736, loan).

BAIN, ROBERT E. M., St. Louis, Mo.: Model of a 4–4–0 locomotive and tender, one-twelfth scale, class 870. of the New York Central Railroad (103300); model of ocean-going tug *Conestoga* (103556).

BAKER, the Misses B. H. and B., Washington, D. C.: Lady's solid gold watch made by Frederic Nicoud, Chaux-de-Fonds, Switzerland, originally part of the Swiss Exhibit at the Centennial Exhibition and afterwards purchased by an aunt of the donor (102256).

BAKER, Dr. F. H., Richmond, Victoria, Australia: 16 miscellaneous insects (104813).

BALL, Dr. C. R. (See under Agriculture, Department of, Bureau of Plant Industry.)

BALL, Prof. O. M., College Station, Tex.: 50 fossil plants from Colorado and Texas (103181).

BALL, WILLIAM HOWARD, Washington, D. C.: Skink from Camp Roosevelt, Md.; golden plover from near Hains Point, D. C.; also snow bunting from the same localtiy; lizard from South Carolina; gray-headed lovebird; trunk skeleton of a European widgeon from Virginia; Carolina chickadee; 10 crabs, 4 insects, and 3 frogs taken at Pinellas Point, near St. Petersburg, Fla. (102268, 103338, 103847, 104039, 104265, 104696, 105142, 105998).

BALLOU, Miss JENNIE M., Woonsocket, R. I.: 2 bows and 5 arrows from Peru (101905).

BANKS, NATHAN, Cambridge, Mass.: 2 specimens of flies (103523).

BANN, JAMES, Cincinnati, Ohio. Wood-engraved "Self-portrait" by the donor (102609); wood engraving by the donor of his daughter Helen (104008).

BARBER, H. S., Washington, D. C.: 6 marine invertebrates taken from caves in Virginia (103184); least short-tailed shrew (104438); 1,000 miscellaneous insects, many new to the Museum collections and some new species representing approximately 18 species, trapped in Luray, Mushroom, Maddens, Battlefield, and George Washington Caves, in Shenandoah Valley, and Washington Crystal Cave, near Boonsboro, Md. (105868). (See also under Kenneth Cooper).

BARBER, H. S., and Dr. Waldo L Schmitt, Washington, D. C.: Skunk skull with partial skeleton (104197).

BARBOUR, Dr. E. H., Lincoln, Nebr. (through Dr. O. P. Hay): Casts of the palates of 2 proboscidians (103322).

BARRATT, ROY K., Adelaide, South Australia: 70 hand samples of Australian woods (102311, exchange).

BARRINGER, VICTOR C., Monroe, La.: 3 human skulls (2 male and 1 female) and a lot of long bones from Louisiana (102482).

BARTLETT TREE RESEARCH LABORATORIES, Stamford, Conn. (through Dr. E. P. Felt, chief entomologist): Fly reared from larvae preying on red cedar aphid (103764).

BARTRAM, EDWIN B. (See under Prof. Manuel Valerio.)

BARTSCH, Dr. PAUL, Washington, D. C.: Cultivated plant originally from Florida (105269). (See also under Walter Rathbone Bacon scholarship).

BASIL, ANGUS, London, England: 51 photographic portraits and figure studies for special exhibition during November and December, 1928 (103524, loan).

BASSETT, J. M., Hammonton, N. J.: Plant from New Jersey (102260).

BEACH, Dr. IRVING T., Ithaca, N. Y.: 3 specimens for the Loeb collection of chemical types (101479).

BEAM, HARRY L., Otter, Mont.: Scorpion from Montana (103978).

BECKMAN, CHARLES, Arlington, Oreg.: Collection of flint implements, copper beads, and other objects from the Columbia River Valley, Wash. (102305); archeological material collected at various sites along the Columbia River in Klickitat County, Wash. (103531); archeological material from an Indian camp site at Roosevelt, Klickitat County, Wash. (104055); stone and bone implements collected by the donor from a site near Roosevelt, Wash. (105914). (See also under Joseph Bunch.)

BECKWITH, FRANK, Delta, Utah: 250 specimens of Middle Cambrian trilobites and 3 specimens of phyllopods from Utah (102163).

BEHNING, Dr. A. L., Saratov, U.S.S.R. in Europe: 13 amphipods from the Volga River, representing species new to the Museum collections (102697, exchange).

BENEDICT, JAMES E., jr., Linden, Md.: 33 specimens of fresh-water shells from Alabama (102136); (through Dr. Edgar T. Wherry) plant from Missouri (102737); plant from Maryland; also 2 plants (103332, 103882).

BENHAM, W. M., El Paso, Tex.: 2 specimens of the chlorarsenate of lead, mimetite, from Velardena mine, Santa Eulalia District, Chihuahua, Mexico (101088).

BENJAMIN, Dr. MARCUS, Washington, D. C.: Sheet of 20 poster stamps of "International Exhibition, Colonial Maritime Flemish Art, Antwerp, Avril, 1930, Oct." (103138).

BENSON, F. P., Newport News, Va.: Model of a clipper ship, rigged, without sails (103347, loan).

BEQUAERT, Dr. JOSEPH, Boston, Mass.: Bee (paratype) (102942); 2 wasps (104122).

BERENWITZ, RICHARD VON, Brentwood, Md.: Piece of a fossil log from the Potomac formation, Brentwood, Md. (102567).

BERKELEY, Miss ALFREDA, Nanaimo, British Columbia, Canada: Approximately 43 specimens of crustaceans, collected by the donor (103090).

BERNICE P. BISHOP MUSEUM, Honolulu, Hawaii: 40 specimens of flies (103395, exchange).

BERRY, Prof. E. W., Baltimore, Md.: 6 type specimens of fossil beetles from the Eocene rocks of Tennessee and Arkansas (104872); types of Cretaceous Foraminifera and the holotype of an Eocene insect from Tennessee (105996).

BERTO, V. J., Bothell, Wash.: 6 Eskimo skulls (3 male and 3 female), and 2 lots of pottery fragments from the Lower Yukon (102203).

BETIKOFER, WILFRED A., Washington, D. C.: 2 starfishes from the Devonian rocks of New York (102289).

BIMEL-ASHCROFT MANUFACTURING CO., Poplar Bluff, Mo.: 2 insects (103193).

BING, JOSEPH M., New York City: 220 photographs, being the pictorial section of the seventy-third exhibit of the Royal Photographic Society of Great Britain, for special exhibition from December 1 to 25, 1928 (104010, loan).

BIRDSEY, BEN A., Creede, Colo.: Specimen of luminous lead-zinc ore from Elwood, Colo. (104744).

BISHOP, Dr. Louis B., Pasadena, Calif.: 5 trunk skeletons of birds from Europe (104330).

BISHOPP, F. C., Washington, D. C.: Loon (105659).

BLACK, F. F., Burlington, Vt.: Sponge washed ashore on Brigadier's Island, upper Penobscot Bay, Me. (103199).

BLACKISTON, A. H., San Francisco, Calif.: 2 Babylonian cuneiform tablets (105706, loan).

BLACKISTON, Miss Helen, Montevallo, Ala.: Bryozoan collected by the donor (102258); 4 salamanders from Alabama (105369).

BLAISDELL, Dr. F. E., San Francisco, Calif.: 30 flies from Santa Barbara, Calif. (104987); 3 beetles, paratypes (105373).

BLAKE, Dr. S. F., Washington, D. C.: 48 plants (104443, 104476). (See also under Agriculture, Department of, Bureau of Plant Industry.)

BLANC, Baron Gian Alberto, Rome, Italy: 16 pieces representing bones and teeth of a quaternary wild ass found in southern Italy (100716, exchange).

BLISS, Gerald D., Jr., Cristobal, Canal Zone: 3 medio-centavo pieces of the Republic of Panama coined in 1907 (103766).

BLUMENBERG, Henry. (See under Western Borax Co.)

BODEKER, Fr., Coln a/ Rhein, Germany: 6 photographs of new species of Cacti (104259).

BORDEN, Richard P. (See under American Hospital Association, Chicago, Ill.)

BORING, Miss Alice M., Philadelphia, Pa.: 20 amphibians from Peking, China (104038).

BOSCHAN, George, Vienna, Austria: Photograph of a plant (102264).

BOST, Dr. Ralph W. (See under Dr. A. S. Wheeler.)

BOSTON YOUNG MEN'S CHRISTIAN UNION CAMERA CLUB, THE (through Mr. F. R. Fraprie): Autochrome transparency, being the first portrait made on a color plate by Antoine Lumiere (103458).

BOSWELL, John S. C., North Braddock, Alexandria, Va.: 53 reptiles and amphibians, 1 centiped, 9 arachnids, and 5 bats from Haiti (103506, exchange).

BOTANIC GARDENS, Singapore, Straits Settlements: 225 plants (102196, 103100, 105003). Exchange.

BOTANISCH MUSEUM EN HERBARIUM VAN DE RIJKSUNIVERSITEIT Utrecht, Holland: 103 plants from Surinam (101974, exchange).

BOTANISHES MUSEUM, Berlin-Dahlem, Germany: 67 ferns; 2 photographs of types of plants; 91 plants from Columbia (103314; 104411; 105697). Exchange.

BOTTIMER, L. J., Lake Alfred, Fla.: 37 plants from Florida (103176).

BOX, Harold E., Tucuman, Argentina: 76 flies from Argentina (105612).

BOYCE, A. M. (See under California, University of, citrus experiment station.)

BRADY, M. K., Washington, D. C.: 34 reptiles and amphibians from Maryland and Virginia (102173); mollusk from Hog Island, Va. (105694).

BRESNAHAN, John (through J. T. Bresnahan, Washington, D. C.): Saber carried during the Civil War by Col. Silas Colgrove, twenty-seventh Indiana Infantry (103173, bequest).

BRESNAHAN, J. T. (See under John Bresnahan.)

BRIDWELL, J. C., Washington, D. C.: 2 plants from West Virginia and the District of Columbia (103134); 2 salamanders and a mollusk from near Luray Caves, Va. (103999). (See also under A. E. Navez.)

BRIGANDI, Philip, Meadville, Pa. (through Keystone View Co. (Inc.): Telebinocular stereoscope and 4 stereoscopic views (102710).

BRIGHAM YOUNG UNIVERSITY, Provo, Utah (through Dr. Vasco M. Tanner): 5 beetles from Utah (105912).

BRIGNOLES BOTANIC STATION, Brignoles, France: Snake from France (103863).

BRIMLEY, C. S. (See under North Carolina Department of Agriculture.)

BRINKLEY, B. T., Springfield, S. C.: Moth from North Carolina (105240).

BRINKMAN, A. H., Craigmyle, Alberta, Canada: 37 plants (102006); 70 plants from Canada (103839).

BRITISH GOVERNMENT:

British Museum (Natural History), London, England: 9 crinoids (99736); specimen of the mineral sursassite from Switzerland (101435, exchange); 4 mineral specimens—2 of corundum, 1 ullmannite, and 1 of alstonite (102586, exchange); (through F. W. Edwards) 168 specimens of Diptera, mostly Culicidae; approximately 700 mosquitoes, and 69 specimens of Micetophilodae, all flies (102764, 103342, exchange); 100 specimens of mosquitoes from Africa and 5 flies (104195, 105633); (through J. R. Norman) 3 fishes (103023, exchange); 219 ferns, chiefly from Jamaica (103316, exchange); 6 geckos from Asia, one a paratype (104490, exchange); 323 plants collected in Ecuador by Jameson (104981, exchange); 2 amphibians from India and a reptile from China (105593).

Imperial Bureau of Entomology, London, England: (through D. S. Wilkinson) 24 specimens representing 15 species of parasitic Hymenoptera (102266); 19 specimens, all paratypes, representing 10 species, of parasitic Hymenoptera (103744, exchange); (through O. W. Richards) 3 bees, one being a paratype (106080, exchange).

Royal Botanic Gardens, Kew, Surrey, England: 274 plants collected chiefly by Doctor Dalziel on the Allison V. Amour expedition to west tropical

BRITISH GOVERNMENT—Con.

Royal Botanic Gardens, Kew—Con. Africa (103115); 16 plants (103315); 454 ferns from South Amercia (103542); 942 plants from tropical America (103855); 52 plants from Sierra Leone (104810); 268 plants from Panama and Brazil (104868); 150 plants, chiefly East Indian ferns (105412). Exchange.

Royal Botanic Garden, Edinburgh, Scotland: 48 plants (103358, exchange).

BRODE, J. STANLEY, Friday Harbor, Wash.: 3 plants from Washington (102187).

BROMLEY, S. W., Stamford, Conn.: 2 flies (cotypes) (105254, exchange).

BROOKLYN MUSEUM, Brooklyn, N. Y., 66173 specimens of Lepidoptera, including approximately 650 types (105452, permanent deposit).

BROOKS, Rev. W. E., Morgantown, W. Va.: Set of flags used by the United States ambulance service during the World War (101820).

BROTHERS, Dr. V. F., Helsingfors, Finland: 63 specimens of mosses from Siberia and Japan (102979, exchange).

BROWN, EDWARD J., Coconut Grove, Fla.: 7 lizards, 6 snakes, and 12 salamanders from Florida (102145); skin of Florida red-shouldered hawk (102211); 8 crayfish collected by the donor at Lake Harris, Lake County, Fla. (102277); blue-fronted jay from Florida (103118).

BROWN, Mrs. E. S., Edina, Mo.: Anthropoid (chimpanzee) skull and gorilla lower jaw; also 2 hippopotamus teeth collected by Rev. Ellen I. Burk in Belgian Congo, Africa (105763).

BROWN BROTHERS, New York City: 21 photographs of the domestic and scientific life of Wilbur and Orville Wright (104873, exchange).

BROWNING, CHARLES L., Connellsville, Pa.: Sporting rifle, double-barreled gun, and accessories of the early part of the nineteenth century (9 specimens) (104175).

BRUG, S. L., Weltevreden, Salemba, Dutch East Indies (through Dr. H. G. Dyar); 2 mosquitoes, male and female, a remarkable anopheline with short palpi in both eyes (104194).

BUCK, CHARLES F., Lacon, Ill.: 2 Indian skulls from the Dickson Mound, near Lewiston, Ill. (102933).

BUDDY, Mrs. KATHERINE G., Brooklyn, N. Y., and Mrs. RUTH G. THOMAS, El Paso, Tex.: Chapeau and epaulets owned by Capt. Charles V. Gridley, United States Navy (102037).

BUES, Dr. C., Cuzco, Peru: 2 plants from Peru (104144).

BUFFALO SOCIETY OF NATURAL SCIENCES, Buffalo, N. Y. (through Dr. Charles J. Fish): Approximately 825 specimens of crustaceans taken from Lake Erie during the summer of 1928 and 37 insects (103120).

BULLOCK, D. S., Angol, Chile: 15 insects from Chile (102028); 64 flies and 25 beetles from Chile (102041); also 223 miscellaneous insects from Chile (104691).

BUNCH, F. A., Las Cruces, N. Mex.: 3 specimens of living cacti (104542).

BUNCH, JOSEPH, Arlington, Oreg. (through Charles Beckman): Stone maul found on the Columbia River near Arlington, Oreg. (103952).

BURK, Rev. ELLEN I., Shabunda, Kivu District, Belgian Congo, Africa: Collection of approximately 196 ethnological objects from Shabunda, Kivu District, Belgian Congo, Africa, secured by the donor (104409).

BURKENROAD, MARTIN, New Orleans, La.: 3 insects from Mississippi and Louisiana, approximately 50 barnacles, discodrilled worms, and 2 specimens of brackish-water mussels from Louisiana (104173).

BURNS, Dr. LOUISA, Los Angeles, Calif. (through Dr. Riley D. Moore, Washington, D. C.): Spinal column of a dog for addition to the osteopathy collection (105249).

BURT, CHARLES E., Ann Arbor, Mich: Lizard from Kansas (102176).

BUSCK, AUGUST. (See under Mr. Jeane D. Gunder.)

BUSH, B. F., Courtney, Mo.: 9 plants from Missouri (105856).

BUSH, Miss ELEANOR, Seattle, Wash.: 18 brittlestars from San Juan County, Wash. (102752).

BUSH-BROWN, HENRY E., Washington, D. C.: Silver-headed cane originally presented to Henry K. Brown, a noted sculptor, and an uncle of the donor, by the employees of his Brooklyn, N. Y., art foundry (104521).

BUTLER, Capt. CHARLES S. (M. C.), United States Navy. (See under Capt. A. R. Alfred.)

CALDERON, Dr. S. (See under Salvador, Government of, Direccion General de Agricultura.)

CALIFORNIA ACADEMY OF SCIENCES, San Francisco, Calif.: 43 plants, cacti, collected by I. M. Johnston in Lower California (102740); 18 specimens of ferns from Arizona and New Mexico (104169). Exchange.

CALIFORNIA, UNIVERSITY OF:

College of Agriculture (through Prof. E. O. Essig): 14 specimens of flies (102789).

Department of Botany: 362 plants from Mongolia; 225 plants from Indo-China; 48 specimens of fungi (103178, 103389, 105780, exchange).

Museum of Vertebrate Zoology: 14 bird skins from Lower California representing 7 subspecies new to the collections in the National Museum (102698, deposit).

Southern Branch: Los Angeles, Calif. (through Prof. Carl Epling): 448 plants from Idaho (103754, exchange); (through Miss Freda Detmers) plant from California (104724); 15 plants from Brazil (105698, exchange).

CALIFORNIA, UNIV. OF—Continued.
Citrus Experiment Station, Riverside, Calif. (through A. M. Boyce): 5 specimens of flies (102767).

CALLY, J. RELLIS, Savannah, Ga. (through Agriculture, Department of, Bureau of Entomology, Washington, D. C.): Worm from Savannah, Ga., collected by the donor (103330).

CAMERON, Dr. A. E. (See under Saskatchewan, University of).

CAMERON, Dr. MALCOLM, London, England: 45 beetles, representing 34 species, 6 of which are represented by cotypes (105525, exchange).

CAMPBELL, Dr. J. W., Westland, New Zealand: 200 miscellaneous insects from New Zealand (105880).

CAMPOS, R., Prof. F., Guayaquil, Ecuador: 6 flies (98733, exchange); 69 flies from Ecuador (105695).

CANADIAN GOVERNMENT:
Department of Agriculture, Entomological Branch, Ottawa, Canada (through Dr. J. McDunnough): 6 flies, including 1 paratype (105160).
Biological Board of Canada, Pacific Biological Station, Nanaimo, British Columbia (through G. H. Wailes) 51 specimens of crustaceans; 40 specimens of crustaceans, comprising 29 shrimps and 11 amphipods; 17 specimens of crustaceans, comprising 7 shrimps and 10 amphipods; approximately 26 specimens of crustaceans, all from Canada (101150, 101292, 101487, 102483).

CAREY, Capt. CHARLES, Washington, D. C.: A modern French watch the dial numerals of which automatically shift every 12 hours in accordance with the 24-hour system (104687).

CARNEGIE INSTITUTE OF TECHNOLOGY, The Laboratory Press, Pittsburgh, Pa.: 19 specimens of fine printing, pamphlets, and broadsides (106084).

CARNEGIE INSTITUTION OF WASHINGTON, Washington, D. C.: 17 birds from Iceland and a bat from the Canal Zone (101259); 2 fossil vertebrate specimens collected in Wheeler County, Oreg., by Dr. E. L. Packard (104262, deposit); 183 European plants collected by I. Dorfler (105553).

CARNEGIE MUSEUM, Pittsburgh, Pa.: Pair of Guadalupe petrels (103196, exchange).

CARTWRIGHT, O. L., Oswego, S. C.: 1,697 beetles, mostly of the family Cicindelidae (102063).

CARTY, A. B., Washington, D. C.: 12 examples of silk stencil printing; map printed in color; engraving in color; a book of examples of printing (104009). (See also under H. E. Jones & Sons (Inc.).)

CASCADDEN, EARLE S., Lapel, Ind.: 100 moth larvae collected on willow aster in Indiana (101990).

CASEY, Mrs. LAURA WELCH, Washington, D. C.: Basketry hat from the Philippine Islands (104006); trinket basket with lid and a basketry drinking cup made by the Tulare Indians of California (104979).

CAWSTON, Dr. F. G. (See under W. J. Hutchison.)

CELANESE CORPORATION OF AMERICA, New York City: 26 specimens of plain, figured, dyed, and printed fabrics, in various weave structures, made from Celanese yarn, a synthetic fiber of cellulose acetate from cotton linters (104212); series of 66 specimens illustrating the manufacture of cellulose acetate plastics (104249).

CERTAIN-TEED PRODUCTS CORPORATION, Philadelphia, Pa.: A painting adapted to the measurement exhibit and a series of 15 prints of similar composition (103548).

CEYLON, DEPARTMENT OF AGRICULTURE OF PERADENIYA: 157 plants from Ceylon (104838, 104980, exchange).

CHAMBERLAIN, E. B., Charleston, S. C.: 10 salamanders from St. Matthews, S. C. (103087).

CHAMBERLAIN FUND, FRANCES LEA, Smithsonian Institution: A yellow topaz, a blue topaz, and a cameo of Hungarian opal (104014); cut gem of pollucite (104840); bracelet of Indian workmanship set with large turquoise (104841); carved tourmaline (105151); statue carved from rose quartz, with stand (105846); 4,000 lots (approximately 50,000 specimens) of Jamaican land shells, collected by C. R. Orcutt (106046).

CHAPIN, Dr. E. A., Washington, D. C.: 2 specimens of mollusks from the mouth of Dead Run, Va. (103294).

CHARLES UNIVERSITY, Prague VI, Czechoslovakia Geological Institute (through Prof. J. Perněr): Collection of Ordovician, Devonian, and Cretaceous bryozoa from Bohemia (103533).

CHASE, Mrs. AGNES, Washington, D. C. (See under Fukien Christian University, Foochow, China.)

CHASE, Miss CATHERINE R., Youngstown, Ohio: Example of fossil seaweed (fucoid) (101797).

CHASE & CO., L. C., Boston, Mass.: Process sample of block printed mohair velvet, showing the 11 successive applications of color in this print, and 2 wood blocks of the type used for the printing (104475).

CHICKERING, J. J., Boston, Mass.: 1,378 eggs of birds and 28 nests, including many from Arctic America (104849).

CHUBB, L. J., London, England: Series of rock samples from Rapa and Rurutu Islands of the Austral group (101796).

CHURCH, Mrs. MARY E., Attleboro, Mass.: Cavalry saber presented by Gen. Philip H. Sheridan to George M. Church, Second Massachusetts Volunteer Cavalry, and a daguerreotype of George M. Church (103819).

CHURCHILL, HARRY W., Washington, D. C.: Rough stamping of a pair of shears (103956).

CLAPP, HOUGHTON G., Brentwood, Md.: Plant from Maryland (102943).

CLARK, AUSTIN B. J., Washington, D. C.: Black-poll warbler (105926).

CLARK, AUSTIN H., Washington, D. C.: 16 butterflies collected in the District of Columbia (102185).

CLARK, HUGH U., Washington, D. C.: Sculptured tortoise from Cabin John, Md. (106045).

CLAUDE JOSEPH, Rev. Brother, Temuco, Chile: 1,092 plants from Chile (102553, 103177, 103975, 105023).

CLELAND, Rev. E. E., Delancey, N. Y: 5 plants from the Himalaya Mountains (103002).

CLELAND, Miss FLORENCE, Landour, Mussoorie, India: 6 plants from India (105838).

CLEMENTS, J. MORGAN, Papeete, Tahiti, Society Islands: 29 specimens of fishes; also mollusks, insects, echinoderms, and marine invertebrates from the Leeward Islands (101246).

CLERK, W. T., Washington, D. C.: Woven beaded belt given by Red Jacket, Seneca chief, to Thompson Steele Harris, chaplain, United States Navy, at Niagara Falls, during President Tyler's administration, 1841–1845 (105650).

CLEVELAND PHOTOGRAPHIC SOCIETY (INC.): 103 pictorial prints, shown during the month of July, 1928 (102178); 70 pictorial photographs for special exhibition during the month of May, 1929 (105769). Loan.

CLEVENGER, J. F., Washington, D. C.: 777 plants, mainly from Ohio (102566).

CLINTON, H. G., Manhattan, Nev.: 3 mineral specimens (102222).

COCKERELL, Prof. T. D. A., Boulder, Colo.: 20 specimens of Hymenoptera, 15 being determined specifically, 5 of which are types (103143); 8

COCKERELL, Prof. T. D. A.—Contd. specimens of bees representing the same number of species (103646); 90 specimens of undetermined miscellaneous insects from Siam and 5 Hymenoptera from Australia (103735); 27 specimens of insects of the orders Coleoptera, Diptera, Hemiptera, Hymenoptera, and Lepidoptera, 25 of which are determined (104202); 22 specimens, including 2 cotypes, of miscellaneous insects of the orders Coleoptera, Homoptera, and Hymenoptera; also an isopod (106073).

CODAZZI, Dr. RICARDO LLERAS, Bogota, Colombia, South America: 2 specimens of minerals, codazzite and viterbite (102248).

COFFIN, Mrs. A. B., Edgartown, Mass. (through Agriculture, Department of, Bureau of Biological Survey): 25 specimens, 2 species, of land and marine shells from Massachusetts (105839).

COLBATH, James S., Baguio, P. I.: Examples of a new mineral, antamokite, from the Philippine Islands (102184).

COLBERT CHAPTER, ALABAMA SOCIETY, DAUGHTERS OF THE AMERICAN REVOLUTION (through National Society, D. A. R., and Mrs. Val Taylor, Uniontown, Ala.); A buckle plate of the period of the Civil War (102971).

COLE, FRANK H., Washington, D. C.: A raising plane and a double scribing gage, both of early type and made of wood (102744).

COLE, Dr. FRANK R., Santa Cruz, Calif.: 6 specimens of Diptera (102121).

COLLIN, J. E., Newmarket, England: 20 specimens of flies, representing 12 species, type species of 12 genera (103504); 7 specimens of flies (104047). Exchange.

COLLINS & AIKMAN CORPORATION, New York City: 21 specimens of upholstery pile fabrics, showing the use of cotton, rayon, mohair, and combinations of these fibers, in the

COLLINS & AIKMAN CORPORATION—Continued.
manufacture of plain plush, figured velour, and jacquard velvet (105758).

COLLINS, C. W. (See under Agriculture, Department of, Bureau of Entomology.)

COLLINS, R. G., Barnegat, N. J.: Specimen of fish (102964).

COLUMBIA ALUMNI ASSOCIATION, Columbia University, New York City: Commemorative medal of the Columbia Alumni Association, 1927 (104124).

COLVIN, WALTER, Arkansas City, Kans.: Skeleton of male lesser prairie chicken from Kansas (103357). (See also under Orville Smock.)

COMMERCE, DEPARTMENT OF:

Bureau of Fisheries, Washington, D. C.: 8 specimens of shrimp from Beaufort, N. C. (102980); 9 specimens of marine invertebrates, comprising 3 crabs, 3 hermit crabs, and 4 ascidians from Beaufort, N. C. (104972); approximately 225 specimens of Medusae and 2 plankton samples (103158); 282 fishes from the vicinity of Greenwood, Miss. (103159); approximately 85 specimens, representing 49 different species and varieties of hexactinellid sponges collected in the Northwestern Pacific in 1906 by the *Albatross* (103186); hexactinellid sponge taken off Cape Spencer, Alaska, in 100 fathoms (104022); specimens of haddock nape bones, industrial raw material for manufacture of small novelties (105012); 3 specimens of Kamloops trout from Kootenay Lake, British Columbia (105680). (See also under H. T. Ebner and Fred J. Foster.)

Bureau of Fisheries Laboratory, Beaufort, N. C. (through S. F. Hildebrand, director): Horseshoe crab from Beaufort, N. C., collected by Bob Smith (102499); (through James S.

COMMERCE, DEPT. OF—Continued.
Bureau of Fisheries Laboratory, Beaufort, N. C.—Continued.
Gutsell) 10 specimens of crustaceans (105645).
Bureau of Standards: Series of weights, measures, and balance, comprising 43 objects, being a part of the standard weights and measures prepared by the United States Government and distributed to the several States under joint resolutions of Congress, dated June 14, 1836, and July 28, 1866 (103830).
Coast and Geodetic Survey: Reproduction of Andrew Ellicott's map of the City of Washington, 1792 (104524).

COMMERCIAL MUSEUM, THE, Philadelphia, Pa.: 2 guayule plants from Mexico (103843).

COMMERCIAL NEWS, THE, Danville, Ill., (through John H. Harrison, president and editor): copy of the Sunday Commercial News of December 16, 1928, printed on paper made from cornstalks (104429).

CONGRESS, LIBRARY OF. (See under Mrs. Grace M. Schirmer).

CONNER, Dr. W. J., Kansas City, Mo. (through Dr. Riley D. Moore): Copy of Conner's The Mechanics of Labor, for addition to the history of osteopathy collection (104253).

COOK, Mrs. Anthony Wayne, Cooksburg, Pa.: Silk dress worn by Mrs. Anthony Wayne Cook when president general of the National Society of the Daughters of the American Revolution, 1923–1926 (102196).

COOK SESQUICENTENNIAL COMMISSION. (See under Hawaii, Territory of.)

COOPER, KENNETH, Flushing, N. Y. (through H. S. Barber): Specimen of European beetle, species new to the Museum collections (104528).

COPELAND, Dr. E. B., Berkeley, Calif.: 100 specimens of ferns from the Philippine Islands (105380, exchange).

COPELAND, Dr. E. B.—Continued.

CORNING GLASS WORKS, Corning, N. Y.: Three early Pyrex baking dishes; portrait of Eugene C. Sullivan, who was largely instrumental in the perfecting of Pyrex glass, and 3 prints of the Perkin medal awarded to Mr. Sullivan in 1929 for his contributions to chemistry (105701); from the Steuben division, 18 pieces of modern art glassware (105767).

CORPORAAL, J. B. (See under Zoologisch Museum, Amsterdam, Holland.)

COVILLE, Dr. Frederick V., Washington, D. C.: 2 plants from New Hampshire (103995). (See also under Agriculture, Department of, Bureau of Plant Industry, and Leslie N. Goodding.)

COVINGTON, J. D., Syracuse, N. Y.: Snake and 2 salamanders from New York (103554).

COXEY, W. JUDSON, Philadelphia, Pa.: 33 Lepidoptera from Ecuador (102257).

CRAMPTON, Prof. G. C., Amherst, Mass.: 2 marine mollusks from Governors Bay, New Zealand (104184).

CRAWFORD, KENNETH J., Bismarck, N. Dak.: Skull of a small insectivore from the White River formation, Chalk Buttes, N. Dak. (102004).

CRAWFORD, WILLIAM P., Bisbee, Ariz.: Specimen of nodular cuprite with envelope of malachite and native silver from Briggs mine, Bisbee (104390).

CREASER, EDWIN P. (See under Michigan, University of.)

CROOK, Prof. A. R. (See under Illinois State Museum Division, Springfield.)

CRUIT, John. (See under Martin Gleason.)

CRYDERMAN, Mrs. MAUDE JENNINGS, Peru, Ind.: Photograph of a corner cupboard made by Abraham Lincoln (104142).

CUARTEL GENERAL, GUARDIA NACIONAL DE NICARAGUA:
Office of the Medical Director, Managua, Nicaragua: 300 specimens of mosquitoes collected by Lieut. Q. C. Tucker (M. C.) in Nicaragua (102569).

CUNNINGHAM, Mrs. W. S., Washington, D. C.: Fine India shawl and a framed photograph of a miniature of Capt. Henry Austin, 1782–1852 (103649, loan).

CUSTER, Clarence P., Denver, Colo.: 40 specimens of bees (103319).

DAKE, Dr. H. C., Portland, Oreg.: 6 specimens of minerals from Owyhee County, Idaho (104352).

DALY, Marcus, New York City: 8 bird skins from Tunis, representing species new to the Museum collections (105954).

DAMPF, Dr. Alfons, Mexico, D. F., Mexico: 2 specimens of flies reared from a rotting ear of corn (100864, exchange).

DANFORTH, Prof. Stuart T., Mayaguez, P. R. Type of a marsh blackbird from Haiti (104232).

DAVIS, Charles A., San Diego, Calif.: Fragmentary remains of fossil invertebrates and a pottery head from the mountains 30 miles east of San Luis Obispo, Calif. (103000).

DAVIS, C. H., Denton, N. C.: 2 beetles collected in North Carolina (105560).

DAVIS, William T., Staten Island, N. Y.: 5 insects, including type and paratype (104693).

DAVIS & GECK, Brooklyn, N. Y.: 2 sets of illustrations entitled "Sutures in Ancient Surgery" and "Famous Hospitals" (102488).

DAY, Dr. J. O., Louisville, Ky. (through Dr. Riley D. Moore): Solar ray outfit used by osteopaths in the treatment of skin diseases (104996).

DEGENER, Otto, Honolulu, Hawaii: 5 specimens of scyllarids, representing 2 species (105258).

DEMAREE, Mr. Delzie, Fayetteville, Ark.: 109 plants from Arkansas (104448, 105749, 105423, 106041); 223 plants (104820, 104968).

DE MEILLON, Dr. Botha, Johannesburg, South Africa: 35 specimens, 10 species, of South American mosquitoes (102623).

DENLEY, Charles F., Rockville, Md.: Female specimen of pheasant believed to be the Hondo copper pheasant (102774); pheasant (102945).

DENMEAD, Talbott, Washington, D. C.: Specimen of lesser scaup duck, and a serpent (or brittle) starfish (103853, 104063).

DESSEZ, Paul, Washington, D. C.: 39 mounted birds from tropical America (102240).

DETMERS, Miss Freda, Los Angeles, Calif. (See under California, University of, Southern Branch).

DICKINS, Mrs. F. W., Washington, D. C.: China teacup of the Martha Washington design made on the occasion of the Centennial in 1876 (104034, loan).

DIMMOCK, Dr. George, Springfield, Mass.: 50,000 miscellaneous insects (105951).

DINGELDEIN, August & SON, New York City: Pendant of moss agate and a carved tray of unakite (103116, 104130).

DINGLE, E. von E., Huger, S. C.: Specimen of flicker from South Carolina (105610).

DINWIDDIE, William, St. Louis, Mo.: Money purse used by the Igorots of Bontoc, Luzon, P. I. (102607).

DIVINE, Lother M., Leesburg, Va.: Steel point of a John Brown pike, found at Harpers Ferry, W. Va. (102149).

DIXON, H. N., Northampton, England: Approximately 100 specimens of Philippine mosses (104853, exchange).

DORAN, E. Byrd. (See under United Spanish War Veterans, Department of the District of Columbia, Washington, D. C.)

DORSEY, H. W., Washington, D. C.: 2 skulls of surf scoter from Maryland (104407).

DRAKE, Mrs. Marie, Juneau, Alaska: 5 photographs showing Indian petroglyphs near Juneau (103204).

DRUSHEL, Dr. J. A., New York City: 8 plants (104209); 100 plants from the United States (104823).

DUCKWORTH, S., Cape Girardeau, Mo.: A disk of calcite from shales near Sedgwickville, Cape Girardeau County, Mo. (105388).

DU PONT DE NEMOURS CO., INC., E. I., Fabrikoid Division, Newburgh, N. Y.: 28 specimens showing stages in the manufacture of Fabrikoid, a synthetic product simulating leather; also shelf trimming and damask tablecloth made of Fabrikoid (104237, 104717).

DU PONT RAYON CO., INC., New York City: 10 specimens of all rayon and mixed rayon fabrics, and a series of specimens showing the manufacture of viscose rayon (102168).

DUVAL, Hugh H., Bastrop, Tex.: 75 plants from Texas (103522); 81 plants (104121).

DYAR, Dr. H. G. (See under S. L. Brug.)

EATON, E. D., Carlisle, Pa.: 5 adults and puparia and 15 larvae of flies collected on spider eggs in Pennsylvania (103206).

EBNER, H. T., Folly Beach, S. C. (through Commerce, Department of, United States Bureau of Fisheries): 8 specimens of shrimp from Folly Beach (102967).

EDMONDSON, C. H., Honolulu, Hawaii: Shrimp from Fiji, collected by Dr. Harry S. Ladd (103109); 2 frogs from Oahu (104168).

EDWARDS, F. W. (See under British Government, British Museum (Natural History).)

EKELEY, Dr. John B., Boulder, Colo.: 72 specimens for the Loeb collection of chemical types (106099).

ELDER, Arthur J., Westport, Conn.: Chrysalis of an insect (103074).

ELIAS, Rev. Brother, Barranquilla, Colombia: 156 plants from Colombia (103132, 103888, 104258).

ENGLISH, T. Savage, Montserrat, British West Indies (through C. R. Orcutt): 2 specimens of peripatus from Montserrat, British West Indies (106018).

ENO, William P., Washington, D. C.: A Peters horse-drawn brougham made by Healey of New York (102705).

EPLING, Prof. Carl. (See under California, University of, Southern Branch.)

ESHNAUR, Mrs. W. H., Bellflower, Calif.: 15 marine bivalve shells from Key West, Fla. (103944).

ESSIG, Prof. E. O. (See under California, University of.)

ESTACION NACIONAL AGRONOMICA Y COLEGIO DE AGRICULTURA, Moca, Dominica (through Dr. Giuseppe Russo). 16 specimens of flies (103361).

EVANS, Victor J., Washington, D. C.: Parrot; black-winged lovebird; tree kangaroo and an anteater; specimen of Cabot's tragopan pheasant; Baikal teal; regent parrot; paradise duck and falcated teal (102210, 102608, 102741, 104456, 104697, 104848, 106033).

FAN MEMORIAL INSTITUTE OF BIOLOGY, Peking, China (through Mr. Charles J. Shen): 12 isopods from China (104340, exchange).

FARRAND, Hiram A., Berlin, N. H.: 2 Farrand "Rapid" Rules—a 6-foot flexible steel measuring tape patented in 1927; also patent specifications and descriptive data (103205).

FAUST, Dr. Ernest C., New Orleans, La.: 15 species of helminths and 10 species of mollusks serving as intermediate hosts thereof, as well as a series of drawings of parasites and intermediate hosts (103992).

FAUSTINO, Leopoldo A., Manila, P. I: 9 land shells from the District of Ermita, Manila (104482).

FAZ, Alfredo, Santiago, Chile: 46 insects (105158, exchange).

FEIHL, CHARLES, Cleveland, Ohio: 5 specimens of larvae in the cocoon of an ichneumon-fly (102619).

FELIPPONE, Dr. FLORENTINO, Montevideo, Uruguay: 21 land, fresh-water, and marine shells; approximately 150 land, fresh-water and marine shells, 1 snake, and 4 insects; 16 fresh-water shells; fresh-water and marine shells, representing 10 species, including the type and 3 specimens of a new species, and a snake; 19 land, fresh-water and marine shells, 2 of which are new species, all from Uruguay (98455, 101374, 102693, 103346, 103875); 4 beetles, 11 fresh-water and marine shells, and a hermit crab captured 20 miles east of Este do Montevideo (102025); 4 specimens of fresh-water mussels, 5 insects, 2 birds, 2 bats, 1 lizard, and an isopod (102229); crab, brown-hooded gull, and 39 marine and fresh-water shells from Uruguay, Brazil, and other localities (102755); 34 specimens, 10 species, of land, fresh-water, and marine shells from Uruguay and Argentina (104441); 2 crabs from Argentina and Uruguay, and 11 specimens, 8 species, of marine shells from Argentina (104513).

FELT, Dr. E. P. (See under Bartlett Tree Research Laboratories, Stamford, Conn.)

FELTHAM, C. B. (See under San Diego, Zoological Society of.)

FERGUSON, WILLIAM C., Hempstead, N. Y. (through Agriculture, Department of, Bureau of Plant Industry): 101 plants from Long Island, New York (104125).

FERNANDES, Dr. D. S., Paramaribo, Surinam: Approximately 50 specimens, 3 species, of land and fresh-water shells and a leech from Surinam (102182).

FIDUCCIA, CLARENCE, New Orleans, La.: 2 isopods from Louisiana (102–798).

FIELD MUSEUM OF NATURAL HISTORY, Chicago, Ill.: 2 ferns from Mexico (102024); 16 specimens of ferns and 10 plants, chiefly ferns, from Nicaragua (102734, 103–180); 19 photographs of plants (103136); 13 plants from Salvador (104153, 104218, 104220, 105439); 2921 plants (104478); 16 plants from Mexico and Costa Rica (105–447); 21 plants from British Honduras (105542, 106014); 695 plants, chiefly from Labrador, Mexico, and Central America (106044). Exchange.

FIRMIN, Rev. Brother GEMEL, Quito, Ecuador: 263 plants from Ecuador (102994, 103621, 105942).

FISH, Dr. CHARLES J. (See under Buffalo Society of Natural Sciences, Buffalo, N. Y.)

FISHER, A. H., Philadelphia, Pa.: 2 bats from South America (102150).

FISHER, Dr. A. K., Washington, D. C.: 2 crabs taken off a hawk-billed turtle which was captured 5 or 6 miles off shore Block Island, R. I. (102558); boa skin from near Natal, Brazil, collected by C. E. Greer (102698). (See also under Justus von Lengerke.)

FISHER, GEORGE L., Houston, Tex.: 70 plants from Florida (102166).

FLEMING, J. H., Toronto, Ontario, Canada: gold-headed black finch from India (103375, exchange).

FLORIDA STATE GEOLOGICAL SURVEY, Tallahassee, Fla. (through Dr. T. Wayland Vaughan): Cotypes, including specimens and thin sections, of 3 species of Foraminifera described by Dr. Vaughan (102666); type specimen of fossil crab (105784).

FLORIDA STATE MUSEUM, Gainesville, Fla.: Zoological material from Florida, comprising 75 fishes, 1 mollusk, and approximately 150 crustaceans and other invertebrates (102042): 3 snakes from Gainesville collected by C. R. Aschemeier (102–699).

FOERSTE, Dr. A. F., Dayton, Ohio: Lower Paleozoic invertebrate fossils collected for the United States National Museum in Estonia and neighboring countries in Europe (104214).

FOGLE, WILLIAM F., Hickory, N. C.: Specimen of cyanite from North Carolina (102759).

FOREST RESEARCH INSTITUTE AND COLLEGE, Dehra Dun, U. P., India: 121 plants from India (102–195).

FOSTER, Fred J., Tallahassee, Fla. (through Commerce, Department of, Bureau of Fisheries): 6 specimens of shrimp from Bass Lake, Dunellon, Fla. (103165).

FOWLER, KATHERINE STEVENS, New York City: 7 specimens of anorthosites from Laramie Mountain, Wyo., described by the donor (105-857).

FRANCIS VIGO CHAPTER, Daughters of the American Revolution, Vincennes, Ind. (through Mrs. George McCoy): China plate commemorating the conference, August, 1810, between Gen. William Henry Harrison, and the Indian Chief Tecumseh (105428).

FRANKLIN, F. S., Raymond, Wash. (through Dr. Mary J. Rathbun): Specimen of fossil crab (104129).

FRAPRIE, F. R. (See under Boston Young Men's Christian Union Camera Club.)

FRAZEE, E. M., Weimar, Tex.: Beetle (102189).

FREDRIKSEN, Miss THYRA, Oslo, Norway: 2 Norwegian silver coins—10-ore, 1924 and 1-krone, 1925 (103008).

FRIEDLANDER, Dr. IMMANUEL, Naples, Italy: Specimen of the mineral arsenschwefel from the crater of Vulcano, Lipari Islands (104159).

FRISON, Dr. T. H., Urbana, Ill.: Male specimen of bumblebee (paratype), and 3 specimens of bees, all paratypes (103351, 105994). (See also under Illinois State Natural History Survey Division, Urbana, Ill.)

FUKIEN CHRISTIAN UNIVERSITY, Foochow, China (through Franklin P. Metcalf): 24 specimens of ferns from China (102265); (through Mrs. Agnes Chase) 24 Chinese ferns (102491). Exchange.

FULLER, Mrs. NETTIE, Breedsville, Mich.: 6 insects and an isopod from Michigan (101833).

FULTZ, HARRY T. (See under Albanian Vocational School, The.)

GAHAN, A. B. (See under Dr. E. B. Hoffmeyer.)

GAIGE, Miss HELEN T. (See under Michigan, University of, Ann Arbor, Mich.)

GALLUP, FRED, Escondido, Calif.: 2 crayfishes, collected by the donor, from Escondido (103207).

GAND, UNIVERSITÉ DE, Laboratoire de Cristallographie et Mineralogie, Ghent, Belgium (through Prof. A. Schoep): Examples of 5 minerals (103883, exchange).

GARBER, Mrs. MARGARET R., Washington, D. C.: A Gilbert clock of Gothic design made in Winchester, Conn., in 1860 (105437, loan).

GARBER, PAUL E., Washington, D. C.: Pair of carpenter's dividers, of early type hand forged from one piece of spring steel (102261); bronze model of an Egyptian obelisk for use in the sun-dial collection (104446); 3 prints and a book illustrating aerial warfare (105136); small Spanish steelyard with double scale (105400).

GARDNER, Dr. LEON L., United States Army, Manila, P. I. (through Dr. J. Percy Moore): Crab from Mount Banashaw, Luzon, P. I. (101563): 3 skeletons and a skull of birds from the Philippines (102010).

GARDNER, ROY, Devol, Okla. (through Dr. Charles N. Gould); 3 stone blades found in a caved-in creek bank in Cotton County, Okla. (104519).

GARRETT, A. O., Salt Lake City, Utah: Plant from Utah (102729); 10 specimens of ferns (103099).

GASTER, C. T. A., Hove, Sussex, England: Approximately 250 specimens of Cretaceous bryozoa from Sussex, England (105139).

GATES, Gordon E., Judson College, Department of Biology, Rangoon, Burma; 58 specimens of marine invertebrates, comprising 50 shrimp and 8 leeches; also 4 beetles and 14 fishes from Rangoon, taken in the dry season (100726).

GATES, Rev. Sebastian, R. N., Grenada, British West Indies.: Beetle and 2 insects (103084, 103105).

GATES, William, Washington, D. C.: Colored plaster cast of one of nine stucco molded figures on walls of ancient tomb at Conalcalco, old Maya empire, about 550 A. D. (105649).

GEE, Prof. N. Gist, Peking, China: 64 insects from China (102563, 103532).

GEISER, Prof. S. W., Dallas, Tex.: 3 specimens of shrimp from White Rock Lake, Dallas, Tex., and 2 toads (102559).

GENERAL BIOLOGICAL SUPPLY HOUSE, Chicago, Ill.: 3 specimens of cephalopods from the coast of Florida (102022); 4 specimens, 2 species, of shrimp from tide pools near Estero Bridge, Tortugas, Fla. (102186).

GENTILE, John (See under Motion Picture Producers & Distributors of America (Inc.).)

GEOLOGICAL SURVEY OF INDIA. (See under Mysore Geological Department, Calcutta, India.

GESTRO, Prof. R. (See under Museo Civico di Storia Naturale, Genoa, Italy.)

GIESCHE SPOLKA AKCYJNA, Katowice, Poland (through Victor C. Heikes and George C. Heikes): Examples of wurtzite and other minerals from the company's mines in Poland (102346).

GILBERT, Chester G. (See under L. R. Johnson.)

GILES, H. T., Parkside, Hallow, Worcester, England: 10 English book plates (104532).

GILL, De Lancey, Washington, D. C.: Portrait on leather dated September 28, 1859 (102907).

GILLET, George M., jr., Baltimore, Md. (through Maj. Louis A. O'Donnell): Replica of the Clarke machine gunners' trophy designed by Hans Schuler (104716).

GILLETTE, Prof. C. P., and Miss M. A. PALMER, Fort Collins, Colo.: 52 slides of aphids representing types of 15 species (105777).

GLASCOCK, Alfred E., Washington, D. C.: Small collection of stone artifacts from Molly Boat Cove on the eastern shore of the Anacostia River, Washington, D. C. (104474).

GLASCOCK, Ernest R., Washington, D. C.: Stereoscopic cabinet and 12 stereoscopic prints (105271).

GLEASON, Martin, and JOHN CRUIT, Washington, D. C.: Specimen of silver gar from the tidal basin, Washington, D. C., taken with light tackle, minnow bait (102915).

GLUCK, Prof. Dr. Hugo, Heidelberg, Germany: 124 plants (102294, 105375). Exchange.

GOLDMAN, E. A., Washington, D. C.: 34 land shells from Sitgreaves National Park, Ariz. (102895, 103647). (See also under Agriculture, Department of, Bureau of Biological Survey.)

GOLDSMITH, Mr. and Mrs. Goldwin, Lawrence, Kans.: Columbia tandem bicycle purchased in Washington, D. C., and used for a tour of Europe in 1896 (102595).

GOLDTHWAITE, Miss Anne, New York City: 45 etchings by Miss Goldthwaite for special exhibition from January 28 to February 24, 1929 (104256, loan).

GOLISCH, Mrs. Ellen, Los Angeles, Calif.: The type and only known specimen of a shell from San Nicolas Island (101764).

GOODDING, LESLIE N., Corvallis, Oreg. (through Dr. Frederick V. Coville): 17 plants from Oregon (103954); 12 plants from California and Arizona (104836); 3 plants from Arizona (105029).

GOODSPEED'S BOOK SHOP, Boston, Mass. (See under George C. Wales.)

GORDON, JACK G., Wigtownshire, Scotland: 15 eggs, 4 species, of weaverbirds from Kenya Colony, Africa (105056, exchange).

GORGAS, Mrs. WILLIAM C., Washington, D. C.: Collection of personal relics, medals, badges, and miscellaneous papers of the late Maj. Gen. William Crawford Gorgas, United States Army (103547, loan).

GOUGH, Miss LULA C., Stephenville, Tex.: Plant (102219).

GOULD, Dr. CHARLES N. (See under Roy Gardner.)

GOVER, A. M., Washington, D. C.: 4 white quartz arrowheads found by the donor within the city limits of Richmond, Va., on the site of an old Indian village (104435).

GRAENICHER, Dr. S., South Miami, Fla.: 10 specimens of named bees (types) representing 5 species (104973); 8 bees representing 4 species (paratypes) (105384).

GRAHAM, Rev. DAVID C., Suifu, Szechuan, China.: 17 frogs and 2 lizards, 25 isopods, 105 amphipods, approximately 4,000 shrimp, 5 earthworms, 4 crabs, 275 insects; approximately 2,000 mollusks, 398 fishes, 33 skeletons and 12 skins of birds; 42 mammals and 126 ethnological specimens (102500); miscellaneous collection of natural history specimens, including birds (skins and skeletons), fishes, insects, mammals (skins and skeletons), minerals, a plant, reptiles (frogs and snakes), shrimps, crabs, and earthworms from China, approximately 3,633 specimens (102929); miscellaneous collection of natural history specimens comprising birds, fishes, insects, mammals, marine invertebrates, mollusks, and reptiles; also ethnological objects, all from China (104167); miscellaneous collection of birds, bird skeletons, fishes, a fossil, insects, mammal skins, mollusks, marine invertebrates, reptiles, and ethnological objects from China (104703); 53 frogs and 4 snakes, vial of parasitic worms, 15 mollusks, 49 skeletons and 14 skins of birds, 40 mammals, 617 insects, 152 fishes, small collection of marine invertebrates, 6 specimens of Carboniferous fossils, a pottery vase and ivory wand (105678); collection of natural history material, comprising birds' skins and skeletons, fishes, insects, mammals, mollusks, and reptiles; also ethnological objects, all from China (105791).

GRANT, ROBERT G., Washington, D. C.: Bronze medal struck at the Imperial Mint, Osaka, Japan, in commemoration of the coronation of the Emperor Hirohito, November 10, 1928 (105415). (See also under Treasury Department, Bureau of the Mint.)

GRAVATT, G. F. (See under Agriculture, Department of, Bureau of Plant Industry, Office of Forest Pathology.)

GRAVES, E. W., Bentonsport, Iowa: 10 specimens of ferns from Iowa (104021, 105653).

GREENAWAY, Mrs. CAROLINE C., Alexandria, Va.: A colonial tape loom—a heddle-frame—of the table type for hand weaving of narrow bands, used for many years by the Cobey family of Charles County, Md. (104410, loan).

GREENE, Mrs. GEORGE, L., Oklahoma City, Okla.: 55 specimens of ferns from Colombia (104395).

GREENFIELD, RAY, Takoma Park, Md.: Quartzite rejectage from an Indian quarry site 2 miles northeast of Takoma Park, Md. (103648); 90

GREENFIELD, RAY—Continued.
amphipods and approximately 200 isopods from a small creek near Hyattsville, Md., collected by the donor (104523); Carolina wren from Maryland (104681); 2 crayfishes from a small stream running into the Miami River, Dayton, Ohio (105376).

GREENWALD, Dr. ISIDOR, New York City: 2 specimens for the Loeb collection of chemical types (101453).

GUATEMALA, GOVERNMENT OF:
Direccion General de Agricultura, Guatemala City, Guatemala: 16 specimens of beetles (104058).

GUIGNOT, Dr. F., Avignon, France: 56 water beetles (104580, exchange).

GUNDER, JEANE D., Pasadena, Calif. (through Mr. August Busck): 500 specimens of mounted Microlepidoptera from California (104205).

GUSTAFSSON, C. E., Trelleborg, Sweden: 80 plants from Sweden (105435, 105781). Exchange.

GUTSELL, JAMES S. (See under Commerce, Department of, Bureau of Fisheries Laboratory, Beaufort, N. C.)

HAGAN, Dr. JONATHAN R., Washington, D. C.: Ericsson hot-air pumping machine (104198).

HAGOOD, S. J., Rogersville, Ala.: Portions of 2 skeletons (adult female Indian and an adolescent) from an overhanging cliff on Elk River in Lauderdale County, Ala. (103446).

HALL, DAVID G., Manhattan, Kans.: 50 specimens of flies (102844, exchange).

HALL, Dr. MAURICE C., Washington, D. C.: 2 sea-urchins from Ancon, Canal Zone, collected by Dr. Louis Schapiro (104185).

HALLETT, Dr. R. L., Brooklyn, N. Y.: Specimen of lead peroxide for the Loeb collection of chemical types (106098).

HALPER, A. M. (See under Prof. R. V. Truitt.)

HAMBLIN, J. M., Cherrydale, Va.: Fine piece of brain coral (105374).

HAMILTON, Mrs. CHARLES H., Toquerville, Utah: 80 plants from Nebraska (103751).

HAMLYN-HARRIS, Dr. R., South Brisbane, Australia: 40 mosquitoes from Australia (103114).

HANNOUTE, Miss SADIE, Krebs, Okla.: Larval case of an insect (102501).

HAPEMAN, Dr. H., Minden, Nebr.: 4 plants (102717, 103104).

HARLTON, BRUCE L., Tulsa, Okla.: 42 specimens representing the types of 22 species of Mississippian and Pennsylvanian ostracods (103364); type specimens of 33 species Pennsylvanian ostracods from Texas (105391).

HARNED, Prof. R. W. (See under Mississippi, State Plant Board of.)

HARRINGTON, G. L., General Ballivian, Province of Salta, Argentina: 14 specimens of land shells from Argentina (104226): Approximately 5,000 specimens of beetles from Argentina, Bolivia, and Chile (104713).

HARRINGTON, J. P. (See under Smithsonian Institution, Bureau of American Ethnology).

HARRIS, WRAY, Bremerton, Wash.: 2 examples of decorated tapa cloth from the island of Ofu, Manu'a group, Samoa (104516); 153 land and marine shells from American Samoa (105252).

HARRISON, JOHN H. (See under Commercial News, The.)

HARSHBERGER, Prof. JOHN W., Philadelphia, Pa.: 178 plants from South America (101617); 198 plants from northern Africa, Corsica, and the French Alps (104164, exchange).

HARVARD UNIVERSITY:
Arnold Arboretum, Jamaica Plain, Mass.: 48 specimens of ferns from Texas, Arkansas, and Missouri (103959, exchange).
Gray Herbarium, Cambridge, Mass. (through C. A. Weatherby): 7 specimens of ferns from Chile (102199); 2 plants (103541); 60 photographic prints of herba-

HARVARD UNIVERSITY—Continued.
Gray Herbarium—Continued.
rium specimens, chiefly types (105658); 86 plants from tropical America (105779, exchange).
Mineralogical Museum, Cambridge, Mass.: Slab weighing 53 pounds of an iron meteorite from Mexico (105869, exchange).
Museum of Comparative Zoölogy, Cambridge, Mass.: Paratype of reptile from Rustan Island (103121, exchange); 56 reptiles and amphibians, including 16 paratypes (103282, exchange); pair of birds from Panama (104689); muskturtle from Tela, Honduras (105148); young turtle (105442).

HARVEY, Prof. E. NEWTON, Princeton, N. J.: Approximately 100 specimens of ostracods from Tokyo Bay (104824).

HASKELL, E. S., Washington, D. C.: 34 ethnological specimens from the mountain provinces of the Philippine Islands (103097).

HAUGHT, OSCAR, Negritos *via* Talara, Peru: 11 plants from Peru (104177).

HAUSMAN, Prof. LEON A., New Brunswick, N. J.: 8 mollusks from New Haven, Connecticut (104135).

HAWAII, TERRITORY OF, Honolulu, Hawaii (through Cook Sesquicentennial Commission): Hawaiian half dollar commemorating the discovery of Hawaii by Capt. James Cook, R. N., in 1778 (103310).

HAWAII, UNIVERSITY OF, Experiment Station, Honolulu, Hawaii (through Dr. J. F. Illingworth): 21 insects from Hawaii (101857, exchange).

HAY, Dr. O. P. (See under Prof. E. H. Barbour).

HAYNES, Mrs. MAY P., Washington, D. C.: 3 old Staffordshire plates, a meat platter, and a pierced-edge cake dish (103124).

HEDGCOCK, G. G., Washington, D. C.: 28 plants from the southern United States (104145).

HEIKES, GEORGE C. (See under Giesche Spolka Akeyjna.)

HEIKES, VICTOR C., Washington, D. C.: Small oblong bag made from a fabric woven from paper yarn, used in Upper Silesia during the stringency of war times (104829). (See also under Giesche Spolka Akcyjna.)

HEIL, CHARLES E., Roslindale, Mass.: 45 etchings by the lender for special exhibition from February 25 to March 24, 1929 (104531, loan); 5 etchings, namely, "Young Song Sparrow," "Young Crow," "Cogitation," "Young Chewinke, No. 1," and "Circus Horse" (105270).

HELLER, A. A., Chico, Calif.: 7 plants (104231).

HENDEL, Prof. Dr. Fr., Vienna, Austria: 22 specimens of flies (90898, exchange).

HENDERSON, JUNIUS, Boulder, Colo.: 85 land and fresh-water shells from the Rocky Mountains, Oregon, and Washington (104123).

HERBST BOAT WORKS, THE, Wilmington, N. C.: Model of the Herbst outboard engine racing boat *Kayo II* (104199).

HERRERA, Prof. FORTUNATO L., Cuzco, Peru: 123 plants and 125 specimens, 2 species, of fresh-water shells from Peru (102993, 103388, 103620); 28 plants (103953).

HESS, FRANK L., Washington, D. C.: Specimen of microlite in lepidolite from Newry, Me. (103893).

HIGGINS, Mrs. J. C., San Diego, Calif.: Specimen and a colored photograph of cactus from California (105549).

HIGGINS, Miss LENA, Long Beach, Calif.: Crab from Anaheim Slough near Long Beach, collected by the donor (101516).

HILDEBRAND, S. F. (See under Commerce, Department of, Bureau of Fisheries Laboratory, Beaufort, N. C.)

HILL, Dr. A. ELIZABETH, Philadelphia, Pa.: 2 specimens for the Loeb collection of chemical types (106102).

HINE, Prof. JAMES S., Columbus, Ohio: 4 flies from Kodiak, Alaska (104875, exchange).

HITCHCOCK, Prof. A. S. (See under Agriculture, Department of, Bureau of Plant Industry, and Mrs. Ynes Mexia.)

HOEHNE, Dr. F. C. (See under Museu Paulista, Sao Paulo, Brazil.)

HOFFMEYER, Dr. E. B., Havdrup, Denmark (through A. B. Gahan): 11 specimens of chalcid flies (9 of them types), representing 8 species of the family Callimomidae (104514, exchange).

HOLLISTON MILLS (INC.), THE Norwood, Mass.: 50 specimens of book cloth comprising 15 patterns and the 35 colors in which each pattern is available (102174).

HOMBERSLEY, Archdeacon ARTHUR, Trinidad, B. W. I.: 6 specimens of ferns from Trinidad (102179, 104459).

HOPKINS, Dr. G. H. E. (See under Medical Research Laboratory, Nairobi, British East Africa).

HOPKINS, Dr. HOYT S., New York City: Crab from a pecten, taken at Beaufort, N. C. (103102).

HOPKINS, Miss LILLIE G., and Miss VIRGINIA M., Geneva, N. Y.: A linen damask tablecloth showing a medallion portrait of George Washington, which has belonged to the family of the donors for approximately 100 years (104809).

HOROLOGICAL INSTITUTE OF AMERICA, Washington, D. C. (through Paul Moore, secretary): The James Warren Packard collection of watches, comprising 30 specimens of intricate design made to order by the leading Swiss, French, and English makers, and including such features as split seconds; hour, quarter, and minute repeaters; moon phases; perpetual calendars, chronographs, striking chimes, gongs, and bells; also operative astronomical charts (103829, loan).

HORTICULTURAL COMMISSIONER, Los Angeles (through H. M. Armitage): 9 specimens of flies collected in California (102786); 2 specimens

HORTICULTURAL COMMISSIONER—Continued.

of fly larvae (103743); 3 flies reared from sunflowers (104484).

HOUGH, GEORGE W., Washington, D. C.: A limestone bowlder pierced by bivalve shells, dredged from the Potomac River (102944).

HOUGH, Dr. WALTER, Washington, D. C.: Chipped quartzite blade found at the old Indian quarry site on Piney Branch, D. C. (103313); 3 old tools and a jeweler's die plate (105759); 7 mollusks from Abilene, Tex. (106081).

HOWARD, J. D., Klamath Falls, Oreg.: Small collection of fossils from Oregon (103926).

HOWARD, Dr. L. O. (See under Agriculture, Department of, Bureau of Entomology.)

HRDLICKA, Dr. A., Washington, D. C.: Two chipped stone implements found on the donor's property in Washington, D. C. (105778).

HUEY, LAWRENCE N., San Diego, Calif., 3 skeletons of birds from California and Lower California (103147).

HUGHES, GEORGE J., F. R. P. S., Bridge of Allan, Stirlingshire, Scotland: 45 prints, portraits and pictorial, for special exhibition during the months of January and February, 1929 (104016, loan).

HUGUES, ALBERT, Gaord, France: 2 mice (104811).

HUIDEKOPER, Col. FREDERIC LOUIS, Washington, D. C.: Pewter plaque bearing the coat of arms of the Huidekoper family (102745).

HULL, FRANK M., Dickinson, Tex.: Specimen of fly (paratype) (85773).

HUMPHREY, EDWIN W. (See under Mineral Club of Public School No. 34, The Bronx, New York City.)

HUMPHREY, H. B., Washington, D. C.: Specimen of moss from Oregon (103618).

HUNNEWELL, F. W., Cambridge, Mass.: Specimen of fern from Jamaica (105651).

HUTCHISON, W. J., Nakuru, Kenya Colony, Africa (through Dr. F. G. Cawston): 13 land and fresh-water shells from East Africa (103615).

HYDE, G. R., Mount Rainier, Md.: Ingersoll watch of the period of 1893 (102263).

IDAHO, UNIVERSITY OF, Entomological Field Station, Parma, Idaho (through Claude Wakeland): 3 specimens of insects (2 larvae and one adult) (102784).

ILLINGWORTH, Dr. J. F. (See under Hawaii, University of, Experiment Station.)

ILLINOIS STATE MUSEUM DIVISION, Springfield, Ill. (through Prof. A. R. Crook): Portion weighing 1 kilogram and cast of a meteoric stone which fell at Tilden, Ill., in July, 1927 (104131).

ILLINOIS STATE NATURAL HISTORY SURVEY DIVISION, Urbana, Ill. (through Dr. T. H. Frison): 2 flies (types) (103171, exchange); 7 flies from Illinois (103521).

ILLINOIS, UNIVERSITY OF, Department of Botany, Urbana, Ill.: 8 specimens of ferns from Guadeloupe (105677, exchange).

INDIA, GEOLOGICAL SURVEY OF, Calcutta, India: Specimen of the mineral juddite (104428, exchange).

INSTITUTO BUTANTAN, Sao Paulo, Brazil (through Dr. A. do Amaral): 94 snakes and 2 lizards from Brazil (104393).

INTERCONTINENTAL RUBBER CO., New York City: 25-pound cake of guayule rubber produced from cultivated plants grown in Monterey County, Calif.; 1 automobile tire, the first manufactured entirely from American grown guayule rubber; also 11 photographs illustrating the cultivation of guayule in southern California (102120); cultivated guayule plant 18 months old; photograph of a 4-row cultivator used in the guayule plantations in Monterey County, Calif. (103553). (See also under American Rubber Producers (Inc.).)

INTERIOR, DEPARTMENT OF:

Original bid of the Wright Brothers for a military airplane, 1908 (104622).

National Park Service; Zion National Park, Utah (through A. M. Woodbury): 64 plants from Zion National Park, Utah (102271).

United States Geological Survey: Rock specimens illustrating a report on the Fairfield and Gettysburg quadrangles, Pennsylvania (102231); collection of Pliocene and Pleistocene vertebrate fossils from near Bliss and Twin Falls, Idaho (102652); a series of mineral specimens, in part type material, from borate deposits, Kramer District, Mohave Desert, Calif. (102928); vertebrate and invertebrate fossils from marl pits at Birmingham, N. J. (102949); 5 small lots of Cretaceous reptilian fossils collected by L. W. Stephenson in Texas (103003); mineral specimens collected by Dr. Edwin Kirk in Nevada during the summer of 1928 (103078); fossil tooth of a donkey from Guatemala (103131); small collection of fossils from Cuba, received from Roy E. Dickerson (103356); samples of sulphur-bearing cap rock from the Big Hill salt dome in Matagorda County, Tex. (103510); 45 specimens of fossils from the Upper Cretaceous of Alabama, forming the type and figured specimens described in Special Report No. 14 of the Geological Survey of Alabama (103528); 2 specimens of Upper Cretaceous ostreids from Texas, figured in Professional Paper No. 126 as characteristic of the Escondido formation (103892); 3 lots of Permian vertebrates collected in 1928 by A. A. Baker's field party in southeastern Utah (103957); 19 boxes of thin sections from rocks of the Taylorsville region, Cali-

INTERIOR, DEPT. OF—Continued.
United States Geological Survey—Continued.
fornia (103977); small collection of Jurassic invertebrates from the Ellis formation in northern Montana (104054); type specimens of fossil freshwater algal deposits from the Green River formation of Colorado, Utah, and Wyoming, described in U. S. Geological Survey Professional Paper 154–G, by W. H. Bradley (104127); portion of a core containing a new variety or new species of fossil plant, from Stephens County, Oklahoma (104221); 25 lots of Cambrian invertebrate fossils collected by members of the Survey staff (105936).

INTERNATIONAL SHOE CO. LABORATORY, Morgantown, N. C. Specimen of worm (104235).

IOWA WESLEYAN COLLEGE, Mount Pleasant, Iowa: 2 flies and a chalcid fly (104702).

ISAACS, W. J., Nashville, Tenn. (through Walter F. Pond): Pottery head found in 1927 near Nashville, Tenn. (102151).

ISHIKAWA, Dr. CHIYOMATSU. (See under Ippei Yokoyama.)

IVES, HERBERT E., New York City: Bronze copies of the Frederic Ives medal awarded biennially by the Optical Society of America for distinguished work in optics (2 specimens) (103614).

IVES, J. D., Jefferson City, Tenn.: 2 isopods from a pool in Wyandotte Cave, Ind., and 16 miscellaneous insects from Tennessee (101762).

JACOBSON, Dr. CARL ALFRED, Morgantown, W. Va.: 5 specimens for the Loeb collection of chemical types (106104).

JACOBSON, EDWARD, Fort de Kock, Sumatra: 51 flies representing 36 species, 6 of them by paratypes (102765); 6 flies and 10 specimens of insects (103534, 103630).

JACOT, ARTHUR P., Tsinan, Sung, China: 4 insects (102254); 2 crustaceans, a bat, and 3 amphibians collected by the donor at Choanji, Lower Diamond Mountains, Korea (104183). (See also under Shantung Christian University.)

JÄGERSKIÖLD, Prof. L. A., Göteborg, Sweden: 9 specimens of isopods (102439, exchange).

JAHN, Prof. Dr. JAROSLAV J., Brno, Czechoslovakia: 30 specimens of building stones from Czechoslovakia (95594, exchange).

JAPANESE BEETLE LABORATORY, Moorestown, N. J. (See under Agriculture, Department of, Bureau of Entomology.)

JARDIM BOTANICO, Rio de Janeiro, Brazil: 1,037 plants from Brazil (102813, 105156). Exchange.

JENNISON, Prof. H. M., Knoxville, Tenn. (through Dr. Edgar T. Wherry): Plant from Tennessee (102738).

JENSEN, J. K., Santa Fe, N. Mex.: Nest of Rocky Mountain evening grosbeak from New Mexico (105403).

JEWETT, STANLEY G., Portland, Oreg.: 2 skeletons of Farallon cormorant from Oregon (102848); 11 lots of bones from Indian shell mounds near entrance to Netarts Bay, Oregon (102908).

JOHNSON, Prof. A. M., Inger, Minn.: 220 plants from Minnesota National Forest (102735); 129 plants from Minnesota (102902).

JOHNSON, C. W., Boston, Mass.: 11 specimens of flies (105014).

JOHNSON, Miss DELLA, St. Paul, Minn.: 8 specimens of beetles, color variety (102269).

JOHNSON, EUGENE W., Washington, D. C.: Lady's English watch movement, purchased about 1851, having two mainsprings, permitting 8-day operation with one winding (106083).

JOHNSON, FRANK, New York City: 120 butterflies and moths, including many species new to the Museum collections (104427); 118 specimens of

JOHNSON, FRANK—Continued. Lepidoptera (105267, 105399); 150 butterflies and moths from China (105693).

JOHNSON, L. R., Washington, D. C. (through Chester G. Gilbert): Specimen of gold-bearing quartz from the Dahlonega district of Georgia (105995).

JOHNSON, TRAVIS, Ozark, Ala.: Stone plummet from Alabama (103981).

JONES, FRANK M., Wilmington, Del.: 12 moths, 11 of which are of a family new to American fauna, the remaining specimen being a rare species of moth (106042).

JONES & SONS (INC.), H. E. New York City (through A. B. Carty): 25 examples of silk-stencil printing called by the donor "Arth-Art Color Process" (102493); 8 progressive proofs of silk screen stencil printing process, "Cruises to the beautiful West Indies" (103112).

JONES, STOCKTON W., Washington, D. C.: Baby's face veil of silk gauze, used by the donor's family; man's silk muffler ornamented with Jacquard designs commemorating jubilee celebration of Queen Victoria in 1887 (105161).

JORDAN, Dr. KARL, Zoological Museum, Tring, Herts, England: 44 specimens of fleas, representing 22 species (97044, exchange).

KALES, A. F., Los Angeles, Calif.: 96 bromoil transfers for special exhibition during the month of October, 1928 (102974, loan); 6 bromoil transfers (103525).

KARLOVICH, JOHN, Zeigler, Ill.: Beetle, 15 land shells and a spider from Illinois (102292, 103626); spider and 12 insects (103110, 104030, 104675).

KAROLITH CORPORATION, Long Island City, N. Y.: 19 specimens showing applications of Karolith, a casein plastic (106011).

KEARNEY, Dr. T. H. (See under Agriculture, Department of, Bureau of Plant Industry.)

KELLETT, Miss BETTY, Sharon, Mass.: 23 slides of Carboniferous ostracods, including types and figured specimens (105353).

KELLOGG, REMINGTON. (See under Smithsonian Institution, collected by members of the staff, with Norman H. Boss.)

KENTUCKY, UNIVERSITY OF, Lexington, Ky.: 2 beetles (105132).

KENYON, A. S., Melbourne, Australia: 37 ethnological specimens and 5 skulls from Australia (105792, exchange).

KEPPEL & CO., FREDERICK. (See under Charles H. Woodbury.)

KERNODLE, GEORGE H., Washington, D. C.: 3 antique clocks, European and American, seventeenth and eighteenth centuries, namely, Dutch "Chamber" clock; German "Wag-on-Wall" clock, and American "Hang-up" clock, made by Silas Burnham Terry, son of Eli Terry; 2 antique American clocks, 1 made by Seth Thomas and 1 by J. C. Brown; original Eli Terry shelf clock of about 1818; also an original Swiss or German cuckoo clock of 1868 (104160, 104165, 105141, loan); small copper spring scale bucket used for weighing gold dust (105652).

KERRVILLE, HENRI GADEAU DE, Rouen, France: Meadow mouse (104132).

KEYSER, E. W., Washington, D. C.: Approximately 51 ethnological specimens (104686, exchange).

KEYSTONE VIEW CO. (INC.). (See under Philip Brigandi.)

KIDDER, Dr. A. V., Andover, Mass.: Natural formation resembling a tomahawk head (104203).

KILLIP, ELLSWORTH P., Washington, D. C.: 132 plants from New York and New Jersey (102194, 104444).

KIMBER, Miss NATALIE B., Tucson, Ariz.: Plant from Arizona (105390).

KIMBER, W. J. (See under Public Library, Museum and Art Gallery of South Australia.)

KING, Dr. GEORGE S. (See under Mr. and Mrs. John D. Adams.)

KIRK, Dr. EDWIN, Washington, D. C.: Fragment of a flint blade and 3 projectile points found west and northwest of Eureka, Nev. (103994).

KIRK, Mrs. MAHLON, Washington, D. C.: Approximately 500 specimens of marine mollusks collected by John K. Townsend on the Nuttall Expedition, 1834–1837 (105648).

KIRKBRIDE, Mrs. VERNON THOMAS, Chicago, Ill.: 50 prints for special exhibition from March 25 to April 21, 1929 (104963, loan).

KIRN, ALBERT, Somerset, Tex.: Fossil leaves and fruit from near Lytle, Atascosa County, Tex. (101898).

KIUSHU IMPERIAL UNIVERSITY, Department of Agriculture, Fukuoka, Japan: 65 specimens of ferns from Peru (104989, exchange).

KLAUBER, L. M., San Diego, Calif.: Salamander and a lizard from California (102200).

KNAUS, Dr. WARREN, McPherson, Kans.: 13 specimens, 2 species, of beetles including 2 paratypes (105757).

KNIGHT ARCHERY CO., Rome, N. Y. (through W. O. Robinson, West Falls Church, Va.: 8 pieces of archery tackle, including a Spanish yew bow, a lemonwood bow, and 6 target arrows (103844, loan).

KNOWLTON, GEORGE F. (See under Utah Agricultural College.)

KNULL, J. N., Harrisburg, Pa.: 97 determined specimens of Hymenoptera (103645).

KRAKE, THEO E., Washington, D. C.: Carpenter's brace and bit of the early nineteenth century, marked on bronze plate "H. Hawks, Solly Works, Sheffield" (105140).

KUEGLE, PAUL C., Youngstown, Ohio: Slab containing fossil fucoids from Ohio (102334).

KYNER, Miss SUSANA, Washington, D. C.: Plant from the vicinity of Washington, D. C. (102746).

LANDRY, EMANUEL, Maguasha West, Quebec, Canada (through the American consul at Campbellton, New Brunswick): Fragmentary specimens of fossils from Canada (97465).

LANE, GEORGE E., Washington, D. C.: Old Brunsviga-Midget calculating machine (104255).

LANG, W. B., Roswell, N. Mex.: Meteoric stone from Pecks Spring, Midland County, Tex. (103963); slab of Abo sandstone with pseudomorphs of halite crystals (104188). (See also under Mr. McKinney).

LANGE, R. C., Webster Grove, Mo. (through United States Department of Agriculture, Bureau of Entomology, Washington, D. C.): Specimen of mollusk (104166).

LATHAM, ROY, Orient, Long Island, N. Y.: 7 specimens, 4 species, of marine shells from Long Island, New York (102122).

LAUBENFELS, M. W. DE, Pacific Grove, Calif.: 23 specimens of sponges, a duplicate set of the material used in sponge-growth experiments by the donor in Tortugas, Fla. (102727).

LAUSEN, CARL, Tucson, Ariz.: 6 specimens of rare minerals from Jerome, Ariz. (104158).

LAWLER, F. R., New Orleans, La.: Specimen of Fowler's toad from Louisiana and a toad from New Orleans (101921, 102319).

LAWRENCE, HARRY, Anvik, Alaska: Skull from Bonasila, collected by the donor (105634).

LELLLMAN, KARL VERNON, Port Stanley, Falkland Islands: 32 specimens of crustaceans, comprising 5 species of amphipods and 1 galatheid, collected by the donor in January, 1928, at Port Stanley, Falklands (100461).

LENGERKE, JUSTUS VON, Orange, N. J. (through Dr. A. K. Fisher): Golden eagle, broadwinged hawk, 2 specimens of Cooper's hawk, and 5 sharp-shinned hawks from New

LENGERKE, JUSTUS VON—Continued. Jersey (103119); duck hawk and 3 sharp-shinned hawks (103182); 21 hawks, 6 species, from New Jersey (103339); 2 red-shouldered hawks from New Jersey (103377, 103535).

LEONARD, E. C., Washington, D. C.: Plant from Furnace Mountain, Va. (103866).

LEWTON, F. L., Washington, D. C.: Woody stem section of coral bean collected March 15, 1929, by the donor in Frostproof, Polk County, Fla. (105247).

LICEO DE COSTA RICA, San Jose, Costa Rica, Central America: 10 specimens of Homoptera and 36 insects from Costa Rica (100450, 101835).

LIEGE, UNIVERSITE DE, Liege, Belgium: 2 specimens of minerals—lohestite and gosseletite (103955, exchange).

LIGHT, Prof. S. F., Berkeley, Calif.: Collection of crustacea from China (103520).

LILLY & CO., ELI, Indianapolis, Ind.: 3 specimens of official pharmaceutical preparations of cascara sagrada (103076).

LILLY, WILLIAM, New York City: Painted wooden shield and a painted wooden spear thrower from Australia (102183); silver goblet, pitcher, and salver presented to Hon. Samuel Lilly in commemoration of his services as United States consul general to British India, 1861–62 (103012); painting of American clipper ship in Calcutta Harbor, by a Chinese artist, Chung Qua, which was presented to the donor's grandfather while consul general of the United States at Calcutta (103202); brass betel nut box from the Philippines (103650); 14 specimens of corals from Lake Taupo, North Island, Venezuela, and a specimen of gold ore from a mine in Ontario, Canada (104172); steel engraved portrait of President James Buchanan, a letter written by him, a collection of coins, paper currency, and a medal, and 1 cactus cane (104236).

LILLY, WILLIAM—Continued.

LINCOLN, F. C., Takoma Park, Md.: Skeleton of roseate tern (102212).

LLOYD, Dr. J. T., Cincinnati, Ohio: An iron mortar and pestle used 60 years ago by Dr. John Uri Lloyd (105691).

LLOYD, Dr. JOHN URI, Cincinnati, Ohio: Copy of "Origin and History of All the Pharmacopeial Vegetable Drugs, Chemicals, and Preparations, with Bibliography" (vol. 1, Vegetable Drugs), by John Uri Lloyd (105379).

LODING, H. P., Mobile, Ala.: Lizard and a snake from Mobile, Ala. (100294, 102129).

LOEWEN, Dr. S. L., Minneapolis, Minn.: Type specimen of a trematode (103514); type and paratype of a new species of tapeworm taken from a Canadian lynx in the vicinity of Minneapolis (105786).

LOHR, Maj. LENOX, United States Army, Washington, D. C.: White-winged scoter from Chapel Point, Md. (103752).

LOMAX, ARTHUR J., F. R. P. S., Cardiff, Wales: 76 pictorial photographs and figure studies for special exhibition during March and April, 1929 (104273, loan).

LOMEN, ALFRED J., Nome, Alaska: Specimen of fish (skate) from St. Mathews Island, Alaska (104807).

LONG, Miss EDITH C., Washington, D. C.: Early American copper kettle, silver dish, punch ladle and serving spoon; New England primer printed in 1813 (103312, 103616). Loan.

LOOMIS, Miss MARTHA L., Framingham Center, Mass.: 559 photographs, 94 of which are prints from her own negatives, 35 photographs of wild flowers, and an engraving of Lord Kaimes (101676).

LUDLOW TYPOGRAPH CO., Chicago, Ill.: Book entitled "The Will of the Late Nicolas Jenson," an example of fine printing (104962).

LUTZ, Dr. ADOLPHO, Rio de Janerio, Brazil: Tree frog from Brazil (104-404).

LYONNET, Prof. DON ERNEST, Mixcoac, D. F., Mexico: 195 plants from Mexico (103355).

MACCASKILL, ALLAN, Jr., Coleraine, Victoria, Australia: 38 specimens of ferns from Australia (104396, exchange).

MACCURDY, Dr. GEORGE GRANT. (See under Archaeological Society of Washington.)

MACFARLAND, F. M., Stanford University, Calif.: 2 paratypes of a nudibranch mollusk (102749).

MAGYAR NEMZETI MUSEUM, Budapest, Hungary: 11 specimens of minerals representing 7 varieties (102291, exchange).

MAIL, G. ALLEN, Bozeman, Mont.: 3 specimens of phyllopods collected in irrigation water of a flooded meadow at Malta, Mont. (103369).

MAISH, Mrs. A. W., Rehoboth Beach, Del.: 2 decorated bull-roarers (102282).

MALLINSON & CO., (INC.), New York City: 22 specimens of novelty silk dress goods, "Early American Prints"—the patterns inspired by early American historical events bear names indicating their source (104252); 10 one-half yard samples of printed "pussy willow" silk representing the "American State Flowers" series; and 68 samples 8 inches by 6 inches showing the range of color combinations of each pattern (104436).

MALLOCH, J. R., Washington, D. C.: Specimen of fly, paratype, new to Museum collection (104012).

MANN, Dr. WILLIAM M., Washington, D. C.: 68 specimens, 5 species, of land mollusks from Hog Island, Va. (103518); specimen of Weddell's paroquet (102905); 46 specimens of mollusks from the Bahamas, Brazil, and Costa Rica (106029).

MARSH, Hon. O. GAYLORD, Sydney, Nova Scotia: Fragments of egg cases of a mollusk from Nova Scotia (102134).

MARSHALL, BYRON C., Imboden, Ark.: Insects, 12 specimens of Lepidoptera; 5 flatworms collected by the donor (102035, 104544, 100356); 3 aquatic earthworms from a well at Imboden and 12 insects (103393, 104239); 15 insects from Arkansas (104190).

MARSHALL, ERNEST B., Laurel, Md.: Brown thrasher, marsh hawk, mole, skull of a weasel, fish crow, immature blackbird (102172, 102946, 105416, 105637, 105768, 105858); jumping mouse, 2 owls, yellow palm warbler, purple grackle and fish crow, all from Maryland (104437, 104460, 105393, 106034).

MARSHALL, GEORGE. (See under Smithsonian Institution, National Museum, collected by members of the staff with A. Wetmore.)

MARSHALL, HENRY R., Wilson, N. C.: Canvas-back duck (a partial albino) from North Carolina (104272).

MARTIN, WILLIAM H., Canton, Ohio: A man-carrying glider built by the donor and operated by towing in the summer of 1909 (102593); model airplane "Martinette" based on experiments begun in 1887 and patented in 1909, which formed the basis for the construction of a man-carrying glider in 1909 (104718).

MASARYK UNIVERSITY, BOTANICAL INSTITUTE OF, Brno, Czechoslovakia: 100 specimens of plants (Flora Exsiccata Republicae Bohemicae Slovenicae Century IV) (104467, exchange).

MASSACHUSETTS MOHAIR PLUSH CO., Boston, Mass.: 8 samples of mohair upholstery plushes in two widths (102770).

MATHESON, WILLIAM J., Fort Hill, Lloyd Neck, Long Island, N. Y.: An original piece of silk dyed with mauve in 1860 by Sir William Henry Perkin, the discoverer of aniline dye (103216).

MAVROMOUSTAKIS, G. A., Limassol, Cyprus: 22 specimens, representing 14 species, of bees, mainly from Cyprus (102796, exchange).

McALLISTER, F., Austin, Tex.: 5 plants from Texas (104530).

McATEE W. L. (See under Agriculture, Department of, Bureau of Biological Survey.)

McCORMACK, Miss HELEN, Richmond, Va.: Small collection of stone implements from North Carolina and Virginia (105953).

McCOY, Mrs. GEORGE. (See under Francis Vigo Chapter of the Daughters of the American Revolution, Vincennes, Ind.)

McCRARY, O. F., Raleigh, N. C.: 9 plants from North Carolina (102957, 103092, 103152, 103163, 103370).

McDANNALD, H. A., Pampa, Tex.: Teeth and other bones of extinct species of rhinoceros and 3-toed horse, from near Pampa, Tex. (102564).

McDONALD GEORGE F., Windsor, Ontario, Canada: Netting tool of elk rib, found on the Detroit River, Essex County, Ontario (102978).

McDUNNOUGH, Dr. J. (See under Canadian Government, Department of Agriculture, Entomological Branch.)

McKINNEY, Mr. (through Mr. W. B. Lang, Roswell, N. Mex.): A portion of an individual of the Odessa, Tex., meteoric iron weighing 2,076.6 grams (103336).

McMILLIN, Dr. H. C., Washington, D. C.: Approximately 25 marine shells from the Pacific coast of North America (105001).

McNEILL, FRANK A. (See under Australian Museum, The.)

MEDICAL RESEARCH LABORATORY, Nairobi, British East Africa (through Dr. G. H. E. Hopkins): 29 rats and 2 mice from British East Africa (102633).

MELENEY, Dr. H. E., Nashville, Tenn.: 102 mollusks and 2 mounted parasitic helminths from them (103842).

MELHASE, JOHN, Berkeley, Calif.: Specimens of the minerals kinradite and ulexite from California (102941, exchange).

MELL, C. D., New York City: 52 plants from Mexico (104445).

MENDEL, EDWARD, Hollywood, Calif.: Specimen and 2 photographs of a cultivated cactus (105752).

MERCK & CO., Rahway, N. J.: 13 specimens of cinchona alkaloids and alkaloidal salts (103077); 7 specimens of official medicinal alkaloids and alkaloid salts (104154).

MERRELL CO., THE W. S., Cincinnati, Ohio: Specimen of oil of sweet birch; 2 specimens of salicylic acid and 4 specimens of salicylates (103745).

MERRILL, Dr. GEORGE P., Washington, D. C.: Miscellaneous rock and mineral specimens from Maine (102995).

MERWIN, Miss RUTH, Washington, D. C.: Wood thrush (105702).

METCALF, FRANKLIN P. (See under Fukien Christian University, Foochow, China.)

METCALF, Mrs. JESSE H., Providence, R. I.: German gas mask of the period of the World War (103972).

METROPOLITAN LIFE INSURANCE CO., New York City: 5 strip films on health subjects for use in the automatic delineascope to supplement exhibits of the section of hygiene and sanitation (102155).

MEXIA, Mrs. YNES, Berkeley, Calif.: 31 plants from Mexico (101518, 102490, 102897, 104182); 2 plants from Alaska (105714); (through Dr. A. S. Hitchcock); 8 plants from Alaska (105834).

MEXICAN GOVERNMENT:

Direccion de Estudios Biologicos: 13 reptiles and amphibians from Mexico (102247, exchange); (through Scripps Institution of Oceanography, La Jolla, Calif.) specimen of fly larva from a rabbit collected in the State of Sonora, Mexico, 4 specimens, 3 species of marine mollusks from the eastern coast of Mexico, and 13 specimens of miscellaneous marine invertebrates (102959).

MEYER, K. F., San Francisco, Calif.: 2 shells from California (103167).

MEYEROWITZ, WILLIAM, New York City: 3 etchings by the donor (105438).

MIAMI, UNIVERSITY OF, Coral Gables, Fla. (through Jay F. W. Pearson): 108 specimens of insects (102300).

MICHIGAN STATE COLLEGE, East Lansing, Mich. (through Prof. R. H. Pettit): A fly and its puparium (103948).

MICHIGAN, UNIVERSITY OF, Ann Arbor, Mich. (through Edwin P. Creaser): 34 specimens of freshwater crustaceans comprising 3 species of phyllopods and 1 amphipod (105703); (through Miss Helen T. Gaige) frog from Juniper Canyon, Chisos Mountains, Tex. (105787).

MIHILLS, Mrs. HARRIET A., Chevy Chase, Md.: China saucer and platter made in England during the early part of the nineteenth century (105135).

MILLE, Rev. LOUIS, S. J., Guayaquil, Ecuador: 75 plants from Ecuador (103746).

MILLER, Prof. HARRY M., jr., St. Louis, Mo.: 3 slides containing types and paratypes of a new trematode (104709).

MINERAL CLUB OF PUBLIC SCHOOL, NO. 34, The Bronx, New York City (through Edwin W. Humphrey): Examples of feldspar crystals from the Bronx, New York City (105543).

MINING MUSEUM, Leningrad, Union of Socialist Soviet Republics: Collection of rocks and minerals, chiefly from Russia (99913, exchange).

MINNESOTA, UNIVERSITY OF, Minneapolis, Minn.:

Department of Botany: Plant from Minnesota (103148, exchange).

Department of Geology and Mineralogy: Specimen of olivine diabase containing the mineral pigeonite from Pigeon Point, Minn. (103851).

MISSISSIPPI STATE PLANT BOARD, Agricultural and Mechanical College, Miss. (through Prof. R. W. Harned): 16 specimens of isopods (105547, 105630).

MISSOURI BOTANICAL GARDEN, St. Louis, Mo.: Fragmentary specimen of fern from Colombia (103622, exchange).

MITCHEL, "Curly," Laurel, Md.: Specimen of American coot (105143).

MITCHELL, Gen. WILLIAM, Middleburg, Va.: 27 mammal skulls and jaws from India (103459).

MOLDENKE, HAROLD N., Selinsgrove, Pa.: Fragmentary specimen of plant from Florida (103149).

MOMIYAMA, TOKU T., Tokyo, Japan: Pair of grouse (103296); 6 skins of sharp-winged grouse from Sakhalin Island (103873). Exchange.

MONTREAL, UNIVERSITÉ DE, Montreal, Quebec, Canada: 438 plants from Quebec (104447, exchange).

MOORE, BENSON B., Washington, D. C.: 3 dry points by the donor—"Old Mills on the C. & O. Canal," "White Herons at Home," and "Pasha" (102709).

MOORE J. PERCY. (See under Dr. Leon L. Gardner.)

MOORE, PAUL. (See under Horological Institute of America.)

MOORE, Dr. RILEY D., Washington, D. C.: Uterine repositor invented by Dr. A. T. Still, and an A. T. Still souvenir spoon for addition to the osteopathy collection (102223, 105028). (See also under Dr. Louisa Burns, Dr. W. J. Conner, Dr. J. O. Day, Dr. G. V. Webster, Dr. Robert H. Williams, and Dr. P. H. Woodall.)

MOOREPARK, Carton, New York City: 50 dry points by the donor for special exhibition from April 21 to May 19, 1929 (104719, loan); 4 dry points by the donor entitled "Practice"; "Rudyard Kipling, 1904"; "Game"; and "Greyhounds, No. 1" (105870).

MORAES, Dr. LUCIANO JACQUES DE, Rio de Janeiro, Brazil: A complete individual weighing 25 grams from a meteoric shower of stones which fell at Sierra de Magi, Municipio de Pesqueira, Pernambuco, Brazil, on October 1, 1923 (106096).

MORGAN, BRENT M., Washington, D. C.: Wild turkey from Virginia (103858); long-tailed shrew from Falls Church, Va. (105004).

MORGAN, Mrs. H. H., New York City: Gold watch chain owned by the late Maj. Gen. Hugh Judson Kilpatrick, United States Volunteers (104284).

MOSCOW, MUSEUM OF UNIVERSITY OF, Moscow, U. S. S. R. (through Dr. W. W. Alpatov, Baltimore, Md.: 5 specimens of copepods, described by Prof. I. I. Messjatzeff in his paper on parasitic copepods from Lake Baikal (106080).

MOTION PICTURE PRODUCERS & DISTRIBUTORS OF AMERICA (INC.), New York City (through John Gentile): Glass mirror screen (102921).

MOULTON, DUDLEY, San Francisco, Calif.: 35 photomicrographs of Thysanoptera (105159).

MOURE, K. R., Cremorne, New South Wales, Australia: Ceremonial stick, message stick, and 2 spearheads from the Wargite Tribe of aborigines of Northern Territory, Australia (99981).

MUNNS, E. N. (See under Agriculture, Department of, Forest Service.)

MUNZ, Dr. PHILIP A., Claremont, Calif.: 95 plants from western United States (105413).

MURRAY, Rev. JAMES J., Lexington, Va.: Mummied clapper rail and specimen of downy woodpecker from Lexington, Va. (103546, 104044); slate-colored junco from Virginia (103949).

MUSEO CIVICO DI STORIA NATURALE, Genoa, Italy (through Prof. R. Gestro, director): 36 specimens, 13 species, of Scoliid wasps from the Old World (102270); 99 specimens of beetles (104450). Exchange.

MUSEO CIVICO DI STORIA NATURALE—Continued.

MUSEU PAULISTA, Sao Paulo, Brazil (through Dr. F. C. Hoehne, chief, botanical section): 684 plants from Brazil (101773, exchange).

MUSEUM D'HISTOIRE NATURELLE, Paris, France: Skin of ocellated pheasant from Annam (102721); pair of black magpie-jays (103536). Exchange.

MYERS, FRANK J., Ventnor, N. J.: 52 slides of rotifers (104898); 16 slides of rotifers new to the Museum collections (105860).

MYERS, J. C. (See under Shell Petroleum Corporation, Houston, Tex.)

MYSORE GEOLOGICAL DEPARTMENT (through Geological Survey of India, Calcutta, India): Specimen of magnetite-quartzite containing the mineral bababudanite from India (105392).

NANKING, UNIVERSITY OF, College of Agriculture and Forestry, Nanking, China: 558 herbarium specimens (104869, exchange).

NATIONAL ANILINE & CHEMICAL CO. (INC.), New York City (through Tanners' Council of America (Inc.), New York City): 50 specimens of artificial dyestuffs used in the leather industry (102169).

NATIONAL CENTRAL UNIVERSITY, Nanking, China: 2 carvings, one of them a goddess of amber and the other an eagle of chalcedony (105999, exchange).

NATIONAL CHILD WELFARE ASSOCIATION (INC.), New York City: 8 charts picturing conditions necessary for the maintenance of good health (102772).

NATIONAL GEOGRAPHIC SOCIETY, Washington, D. C.: Collection of plants, birds, and mammals made by Dr. Joseph F. Rock in the Provinces of Yunnan and Szechuan, China (100997).

NATIONAL MUSEUM, Melbourne, Australia: Tertiary bryozoans from Australia (103891).

NATIONAL SOCIETY OF THE DAUGHTERS OF THE AMERICAN REVOLUTION. (See under Colbert Chapter, Alabama Society, Daughters of the American Revolution.)

NATURHISTORISCHES MUSEUM, BOTANISCHE ABTEILUNG, Vienna, Austria: 44 plants from South America and Mexico (102171, 102665); 117 cryptogams (103175). Exchange.

NATURHISTORISKA RIKSMUSEETS, Botaniska Avdelning, Stockholm, Sweden: Specimen of fern and 300 plants, chiefly from Europe (103133, 104204). Exchange.

NAVEZ, A. E., Cambridge, Mass. (through Mr. J. C. Bridwell): 100 specimens of beetles and 3 specimens of their work (103774).

NEBRASKA, UNIVERSITY OF, Lincoln, Nebr. (through Prof. Don B. Whelan): 6 flies from Nebraska (104234).

NEEDLES, A. W. H., Toronto, Canada: 25 marine shells from Nova Scotia and vicinity and 62 crustaceans from haddock stomach contents (100331).

NELSON, Prof. WILBUR A. (See under Virginia, University of.)

NEVEL, W. D., Andover, Me.: A cut and polished specimen of tourmaline in albite from Newry, Me. (103009, exchange).

NEWCOMBE, Prof. CURTIS L., Morgantown, W. Va.: 4 specimens of crayfish from West Virginia (103761); 3 female specimens of crayfish collected by the donor in West Virginia (105359).

NEW HAVEN CLOCK CO., New Haven, Conn.: Large operating model of deadbeat escapement for clocks (103894).

NEW MEXICO MICA CORPORATION, Sante Fe, N. Mex. (through C. S. Ross, Washington, D. C.): Examples of monazite, samarskite, and

NEW MEXICO MICA CORPORATION—Continued.

bismuthite from Petaca, N. Mex. (103889).

NEWSOM, WILLIAM M., New York City: 45 old gunsmith's tools used in manufacturing handmade muzzle-loading rifles of the early nineteenth century (105021).

NEW YORK BOTANICAL GARDEN, Bronx Park, New York City.: 9 specimens of ferns from Florida (102167, 103945, 105699); 8 plants (102664, 103996); 3 photographs of plants (102903); 27 plants from British Guiana (103656); fern and plant from Cuba (103865, 103867); specimen of moss from the Philippine Islands (103887); 8 specimens of mosses from Peru (104271), plant from Chile (104477); 7 plants from Porto Rico (105656, 105924). Exchange.

NEW YORK EDISON CO., THE, New York City.: Operating model of the Pearl Street power Station, 1882 (104795).

NEW YORK STATE MUSEUM, Albany, N. Y.: Specimen of fly (104458).

NIAGARA SMELTING CORPORATION, Niagara Falls, N. Y.: 4 specimens for the Loeb collection of chemical types (106101).

NIEMEYER, Miss ERNESTINE, Barranquilla, Colombia: 96 plants from Colombia (102259, 102290); 36 plants (102503).

NININGER, Prof. H. H., McPherson, Kans.: Slice from the Coldwater, Kans., meteoric stone (102492, exchange).

NORMA-HOFFMAN BEARINGS CORPORATION, Stamford, Conn.: Photograph of the Wilbur Wright Memorial erected at Le Mans, France (104520).

NORMAN, J. R. (See under British Government, British Museum (Natural History).

NORTH CAROLINA DEPARTMENT OF AGRICULTURE, Raleigh, N. C. (through C. S. Brimley): 4 flies, 2

NORTH CAROLINA DEPARTMENT OF AGRICULTURE—Continued. of them types of 2 species (103293); specimen of fly (104495).

NORTH CAROLINA STATE MUSEUM Raleigh, N. C.: 6 photographs of a sperm whale taken at Wrightsville Beach, near Wilmington, N. C. (105783).

NORTH DAKOTA, UNIVERSITY OF, Department of Biology, University Station, Grand Forks, N. Dak. (through Prof. George C. Wheeler): Group of barnacles embedded in whale skin (102146).

OCHS, Herr Dr. Georg, Frankfort, Germany: 48 specimens, representing 18 species of beetles (101836, exchange).

O'CONNOR, Col. J. C., New York City: Water snake from Virginia (104480).

O'DONNELL, Maj. Louis A. (See under George M. Gillet, jr.)

OHSHIMA, Prof. Hiroshi, Fukuoka, Japan: Approximately 16 specimens of commensal crabs from Japan (103093).

OKLAHOMA AGRICULTURAL AND MECHANICAL COLLEGE, Stillwater, Okla.: Specimen of plant from Oklahoma (101890).

OLDROYD, Mrs. Ida S. (See under Stanford University, Stanford University, Calif.).

OLMSTED, Miss Helen, Washington, D. C.: 3 arrows made by the Ute Indians about 1870 (103750).

O'NEILL, Tom. (See under Texas, State Department of Agriculture.)

ORCUTT, C. R., Jamaica, British West Indies: 27 plants, chiefly ferns, 19 lizards, 40 frogs, 2 birds, 86 specimens of crustaceans, 2 mammals, and 61 insects; 12 sea urchins, 5 mosquitoes, a dragon fly, cactus leaf bearing galls, 4 lizards, a frog, 2 bats, and approximately 60 marine invertebrates; 42 plants, 3 birds, 44 fishes, 54 insects, and 117 specimens of marine invertebrates; 10 shrimps, 13 hermit crabs, 3 crabs, 2 lobsters, and 4 isopods, 15 plants, femur of a dog, 6 insects, and some reptiles; 6

ORCUTT, C. R.—Continued. insects, 7 plants, 1 shovel-nosed shrimp, 12 barnacles, 30 crabs, and 12 sponges; 5 insects, 17 marine invertebrates, 50 plants, 2 rodents, 5 lizards, and one snake; 2 insects and 25 marine invertebrates, all from Jamaica (100558, 101103, 102076, 102914, 103643, 104002, 104481). (See also under T. Savage English and Charles A. Sangster.)

OREGON AGRICULTURAL COLLEGE, Corvallis, Oreg. (through Prof. J. N. Shaw): 19 fresh-water shells from Oregon and Alabama (102790).

OSBORN, F. J., Andrews, Ind.: Specimen of moth (102703).

OUSDAL, Dr. A. F., Santa Barbara, Calif.: Cetacean skull embedded in concretion (102637).

PACIFIC BIOLOGICAL LABORATORIES, Pacific Grove, Calif. (through Mr. E. F. Ricketts): Approximately 42 specimens of crustacea and 14 specimens of mollusks; 23 specimens of crustaceans; approximately 40 specimens of crustaceans; 11 specimens of crustaceans; amphipod taken at Santa Cruz all from California (100865, 101087, 101365, 101493, 103527); specimens (type) of a cephalopod from Monterey Harbor, Calif.; also 15 specimens, 4 species, of parasitic copepods, including the type of a new species, all from Monterey Bay, Calif. (103526, 104673); head of a shark (103684).

PACIFIC MILLS, New York City: 46 specimens representing 20 different fabrics, all cotton, all rayon, and cotton and rayon mixtures (105150).

PAHNKE, Richard J., Washington, D. C.: Carved wooden spoon and a Moro bracelet (104527).

PALMER, Miss M. A. (See under Prof. C. P. Gillette.)

PALMER, R. H., Lansing, Mich.: Approximately 100 specimens, 7 species, of land and fresh-water shells, 2 of which are new, from the Republic of Colombia (104051); 49 mollusks from Jamaica (106094).

PANTEPEC OIL CO. OF VENEZUELA, New York City: Mineral specimen from Venezuela (102007).

PANTONE PROCESSES LTD., Alperton, Middlesex, England: Set of 5 progressive plates and 4 prints from the finished plate on 4 different grades of paper, all of the Pantone process (102644).

PAPWORTH, C. E., Fort Worth, Tex. (through Edgar Smith): Collection of stone implements from Comanche County, Tex. (102606).

PARKS, H. B. (See under Texas Agricultural Experiment Station.)

PAUL, Sister M. VINCENT DE, Detroit, Mich.: 2 plants from Flint, Mich. (102794, 103607).

PAYNE, Miss EMMA C., Washington, D. C.: Royal Siamese kitten (104227).

PEARSE, Dr. A. S., Durham, N. C.: 73 specimens of crustaceans and 67 marine shells collected at Tortugas, Florida, and Beaufort, N. C. (103091).

PEARSON, JAY F. W. (See under Miami, University of, Coral Gables, Fla.)

PEARSON, VIRGIL G., Port au Prince, Haiti: Wasp (104851).

PEIXOTTO, ERNEST, New York City: 9 war landscapes painted by the donor soon after the World War (104470).

PELLOUX, Prof. A., Genoa, Italy: 3 mineral specimens—arsenschwefel, commucite, and pulleite (104146); 12 specimens of minerals from Italy (104806, exchange).

PERKINS, MICHAEL, London, England: 3 cotypes of trematodes mounted on slides (104965).

PERNER, Prof. J. (See under Charles University, Geological Institute of.)

PERRYGO, W. M. (See under Smithsonian Institution, National Museum, collected by members of the staff, with A. Wetmore.)

PETTIT, Prof. R. H. (See under Michigan State College.)

PFAUDLER CO., THE, Rochester, N. Y.: A group of 89 objects and photographs indicating raw materials, manufacturing processes, and uses of glass enamels on metal; also enameled exhibition base for same (99692); miniature glass-lined tank (104254).

PHILIPPINE ISLANDS, GOVERNMENT OF:

Bureau of Science, Manila, P. I.: 52 birds skeletons from the Philippine Islands (104543).

PHILPOTT, Dr. ALFRED, Nelson, New Zealand: Collection of New Zealand Lepidoptera containing 500 named species in more than 900 specimens (104013).

PICKENS, Rev. A. L., Greenville, S. C.: 2 specimens of pearl dace or chub (95760); 41 insects (104498).

PIERCE, W. DWIGHT, Victorias Occ., Negros, P. I.: 2 bat skulls, one with partial skeleton, from Negros Island, P. I.

PILSBRY, Dr. H. A. (See under Smithsonian Institution, National Museum collected by members of the staff, with Paul Bartsch.)

PINCHOT, GIFFORD. (See under Eugene C. Ransbottom.)

PINCHOT SOUTH SEA EXPEDITION, THE: 4 specimens of mollusks, 4 fishes, 2 crabs, 1 porpoise skull, and a piece of porpoise hide (105372); specimen of fern from Little Swan Island, Carribean Sea (105919).

PINKNEY, Miss HELENA S., Washington, D. C. Snuffbox owned by William Pinkney when Ambassador to Great Britain, 1807–1811; also sword, cocked hat, and pair of epaulets owned by Medical Director Ninian Pinkney, United States Navy, during the Civil War (103174, loan).

PIRION, P. Anastase, Santiago, Chile: 88 flies from Chile (102040).

PITTIER, H., Caracas, Venezuela: Specimen of fungus, 79 miscellaneous insects, and 333 plants from Venezuela (103307, 104988, 105138).

PITTS, WILLIAM B., Sunnyvale, Calif.: Examples of rough, cut, and polished semiprecious stones (104128).

PIZZINI, ANDREW, Washington, D. C.: Approximately 150 amphipods and 11 isopods from various localities in and near the District of Columbia, collected by the donor (104522).

PLITT, Prof. CHARLES C., Baltimore, Md.: Plant from British Columbia (105153).

POHL, Dr. E. R., Nashville, Tenn.: Approximately 500 specimens of invertebrate fossils from the Windsor formation of Nova Scotia (102284); collection of conodonts from the Lower Mississippian rocks of northern Tennessee (104414).

POMONA COLLEGE, Claremont, Calif.: Plant from Lower California (105657); 171 plants from the western United States, collected chiefly by Marcus E. Jones (106077, exchange).

POND, WALTER F. (See under W. J. Isaacs.)

POPENOE, C. H., Silver Spring, Md.: Bird and bird egg (102255); specimen of Fischer's love bird and an egg of masked love bird (102554); 8 eggs of Fischer's love bird (104974, 105389); 3 eggs of masked love bird and a specimen of masked love bird (103183, 104850); 2 eggs of yellow-collared love bird (103998).

POPENOE, E. A.: Phyllopod from Wallace County, Kans., collected in November, 1901 (104984).

POPULAR AVIATION, Chicago, Ill.: Original water color for the September issue of Popular Aviation showing two Loening amphibian airplanes (103080).

PORTO RICO, UNIVERSITY OF, Mayaguez, P. R.: 13 insects from Porto Rico (104464).

POST OFFICE DEPARTMENT:

Old letter box from Dooner's Hotel, Philadelphia, Pa., (104171); 13 sets of specimen stamps, etc., in triplicate, (5136 specimens), received from the Internal Bureau of the Universal Postal Union, Berne, Switzerland (102232, 102660, 102989 (2 sets); 103079, 103951, 104715 (2 sets); 105351 (3 sets); 105716, 105754); 3 specimens each of the following United States postage stamps: 2-cent Valley Forge commemorative stamp, 10-cent, 15-cent, and 20-cent special handling stamp; 5-cent air mail stamp, 2-cent and 5-cent stamps surcharged "Hawaii"; 3 specimens of the 2-cent United States postage stamp, surcharged "Molly Pitcher"; 3 specimens each of the following United States postage stamps: 2-cent International Civil Aeronautics Conference stamp, issue of 1928, 5-cent International Civil Aeronautics Conference stamp, issue of 1928; 2-cent George Rogers Clark commemorative stamp, issue of 1929 (9 stamps) (103007, 103962, 105002).

Division of Dead Letters and Dead Parcel Post: 19 pistols and revolvers (103374).

PRECANCEL STAMP SOCIETY, New Berlin, N. Y.: 606 precanceled postage stamps (106093).

PRESCOTT, J. S., Washington, D. C.: Medicine spoon of special design (104065).

PREUTZ, ALEX. E., Brooklyn, N. Y.: Sailor's writing box from the wreck of the battleship *Maine*, which was sunk in the harbor of Habana, Cuba, in 1898 (102711).

PROCTER, WILLIAM, Bar Harbor, Me.: 8 abnormal fiddler crabs from Massachusetts (102953); lithodid crab from Corea, Me. (103540); crab caught in a lobster pot at Corea, Me., by R. H. Hickmay (105879).

PROVINCIAL MUSEUM, Victoria, British Columbia, Canada: Specimen of fern from British Columbia (104529, exchange).

PUBLIC LIBRARY, MUSEUM, AND ART GALLERY OF SOUTH AUSTRALIA, Adelaide, South Australia: Crab (male paratype) collected by W. J. Kimber at Port Willunga, St. Vincent Gulf, South Australia (102138).

PUZEY, H. J., Umbilo, Durban, South Africa: 42 marine mollusks, and 84 specimens, 69 species, of marine shells from South Africa (103841), 104710).

PYATAKOV, M. L., Pacific Ocean Scientific Fishery Research Station, Vladivostok, Siberia: 8 crabs (105932).

QUAYLE, PHILIP P., Kings Mills, Ohio: 4-spark photographs (framed) of fired gun projectiles in flight taken by a system worked out by the donor (103765).

QUEEN, JOHN C., Marshfield, Oreg.: 20 specimens of dry crustaceans from Coos Bay, Oreg., collected by the donor (105849).

QUIRK, NICHOLAS J., Chicago, Ill.: Wood-engraving of Col. C. A. Lindbergh, by the donor, and an enlargement from it (106078).

RADCLIFFE, Miss ROWENA, Washington, D. C.: 3 specimens of shrimp from the Shaw Lily Pond, Kenilworth, D. C., collected by the donor (103323); red bat (105417).

RANSBOTTOM, EUGENE C., Cristobal, Canal Zone (through Mr. Gifford Pinchot, Milford, Pa.): Shark's tooth from Culebra Cut, Canal Zone (105707).

RANSON, ROBERT, St. Augustine, Fla.: 41 specimens of shrimp from the Alcazar pool, St. Augustine, Fla. (102466, 102780); 5 specimens of crustaceans from Florida, collected by the donor (103004).

RATCLIFFE, J. HARRY, Woodhaven, Long Island, N. Y.: 7 pictorial photographs (103185).

RATHBUN, Mrs. F. H., Washington, D. C.: Rose-breasted cockatoo (103101).

RATHBUN, Dr. MARY J. (See under F. S. Franklin.)

RECINOS, Señor Dr. DON ADRIÁN, minister of Guatemala, Washington, D. C.: Mounted quetzal (bird) from Guatemala (105032).

RECORD, Prof. SAMUEL J. (See under Yale University, School of Forestry.)

REED, CLYDE T., Kingsville, Tex.: 75 miscellaneous insects and a lizard from Texas (100046, 103947).

REED, Señor GUILLERMO, Valparaiso, Chile: Approximately 25 specimens of ostracods from Valparaiso, Chile (102924).

REESIDE, Dr. J. B. (See under Joseph H. Sinclair.)

REID, E. D., Washington, D. C.: Ribbon fish and a shark from Chesapeake Bay (104141).

REINHARD, H. J., College Station, Tex.: 8 specimens of flies (104048); 10 specimens of flies including 4 paratypes, from Texas (104723); 7 specimens of flies (105363, exchange).

REYNOLDS, J. C., Owensboro, Ky.: Specimen of fossil coral now forming a geode (103625).

RICE INSTITUTE, THE, Houston, Tex. (through Prof. M. A. Stewart): 20 insects (104967).

RICHARDS, HORACE G., Philadelphia, Pa.: 4 amphipods collected at Skunk Sound, Cape May, N. J., and a specimen of crab collected at Town Bank, Cape May County, N. J. (103188); crab and an amphipod (103990); 8 amphipods, 1 pycnogonid, and an isopod (105765).

RICHARDS, O. W. (See under British Government, Imperial Bureau of Entomology, London, England.)

RICHARZ, Prof. STEPHEN, Techny, Ill.: 2 mineral specimens—magnalite and stilbite (103321).

RICHMOND, Dr. CHARLES W., Washington, D. C.: 5 birds from Cold Spring, N. Y. (105925).

RICKER, P. L. (See under Agriculture, Department of, Bureau of Plant Industry.)

RICKETTS, E. F. (See under Pacific Biological Laboratories.)

RIGGS, Lowry, Rockville, Md.: Skin of an African golden cat (102175).

RIKSMUSEETS PALEOBOTINISKA AVDELNING, Stockholm 50, Sweden: 160 specimens of fossil plants from the Permo-Carboniferous of Shansi, China (103769, exchange).

RINEHART, William G., Batesville, Ark.: 4 cylinderical chert objects showing human handiwork (104035); 2 specimens of manganese ore from near Batesville (104178).

RIPPEY, A. S., Chevy Chase, D. C.: Gray-headed love bird (105660).

ROADS, Miss Katie M., Hillsboro, Ohio: 20 plants from Ohio (102141, 102958); 10 plants (102618).

ROBERTS, Bowie, Falls Church, Va.: 2 wood thrushes (105638).

ROBERTS, C. C., Malden, Mass.: Ethnological material from various localities in Africa (110 specimens) (98913).

ROBERTSON (INC.), Francis H., Westport, Conn. (through Francis H. Robertson): Memorial exhibition of the dry-point etchings by Warren Davis, 37 in number, for special exhibition from May 19 to July 1, 1929 (105761, loan).

ROBERTSON, Francis H. (See under Robertson (Inc.), Francis H.

ROBINSON, Col. Wirt, United States Army, Wingina, Va.: 1,211 bird skins, 2 eggs, and 1 nest from various parts of the world (102206); collection of reptiles, birds, mammals, and insects (105867, bequest).

ROBINSON, Mrs. Wirt, Wingina, Va.: 1 restored stone bowl (105855).

ROBINSON, W. O., West Falls Church, Va.: 8 species of woods collected, in part, by the donor in Fairfax County, Va. (106019). (See also under Archers Co., Knight Archery Co., Cassius Hayward Styles, and W. H. Willner.)

ROEBLING FUND, Smithsonian Institution: 13 specimens of minerals, chiefly from Russian localities (100661); 5 mineral specimens from Italy (101012); 3 mineral specimens—descloizite, scharizerite, and phosphaterde (101153); 4 specimens of minerals (101756); nugget of platinum from Choco, Colombia, South America (101771); 13 mineral specimens from European localities (101992); an individual specimen of iron meteorite weighing 12¾ pounds, found near the western border of Red River County, Tex. (102244); 3 mineral specimens—pseudowavellite, wainschenkite, and pseudomorphose (102707); 8⅓ pounds of pitchblende from North Carolina; (102904); meteoric stone weighing 515 grams (103334); crystal of green tourmaline from Maine (103519); a large exhibition specimen of pegmatite from Newry, Me. (103845); specimen of variscite from Utah and a geode of amethystine quartz from Brazil (103846); 3 mineral specimens—canfieldite (2 specimens), and wolfsbergite (1 specimen) (104120); 8 specimens of minerals (104260); 2 mineral specimens—rottisite and roscherite (104261); nugget of native gold and bismuth (104402); an iron meteorite weighing 1,060 pounds from New Mexico (104453); 3 mineral specimens from Newry, Me. (104547); 3 mineral specimens from Franklin, N. J. (104593); cut gem of benitoite, weight 7.7 carats (104700); 4 small pieces of the mineral zirklerite (104734); 7 specimens of minerals from Italian localities (104832).

ROGERS, Prof. A. F., Stanford University, Calif.: Washings with bryozoans from the Upper Pliocene at Santa Barbara, Calif. (103747).

ROHWER, Carl, East Falls Church, Va.: 10 specimens of tick flies collected from great horned owl, Falls Church, Va. (103144); great horned owl and a sharp-shinned hawk (103117).

ROJAS, Ruben Torres, Cartago, Costa Rica, Central America: 9 fishes, 1

ROJAS, RUBEN TORRES—Continued.
snake, 1 frog, and 1 bat from Costa Rica (103511).

ROOT, Prof. FRANCIS M., Baltimore, Md.: Worm snake from Malaita, Solomon Islands (105341).

ROSS, C. S. (See under New Mexico Mica Corporation, Santa Fe, N. Mex.)

ROTHROCK, H. IRVING, Washington, D. C.: Specimen of "Ebano" from Lake Maracaibo region within 100 miles of Maracaibo, Venezuela (105248).

ROWLETT, Mrs. S. C., Halifax, Va.: Plant from Virginia (102003).

ROYAL HORTICULTURAL SOCIETY GARDENS, Wisley, Ripley, Surrey, England (through G. Fox Wilson): 3 flies, 1 the type of a new species, with puparia of 2 (103885).

ROYAL ONTARIO MUSEUM OF MINERALOGY, Toronto, Canada: Rock and mineral specimens representing 25 varieties (105632, exchange).

RUBBER ASSOCIATION OF AMERICA, THE, New York City: Specimen of cord tire fabric made without filling threads, and 3 photographs showing steps in its manufacture (102489); collection of articles of jewelry and hard rubber relating to the invention and application of vulcanized rubber by Charles Goodyear, and especially made for the London Crystal Palace Exhibition of 1851 and the Paris Exposition of 1855 (102621, deposit).

RUDGE, WILLIAM EDWIN, New York City: 2 examples of fine printing—"Herbert Hoover" and "Hoover's Message of November 7, 1928" (103848).

RUNYON, ROBERT, Brownsville, Tex.: 142 plants from Texas and Kentucky (103836, 105422, 105750, 105946).

RUSBY, Dr. H. H., New York City: 56 plants from Mexico (103868).

RUSSELL, PAUL G., Washington, D. C.: 147 plants collected in the vicinity of Washington, D. C. (102918).

RUSSELL, PAUL G.—Continued.
(See also under Smithsonian Institution, National Museum, collected by members of the staff with Dr. J. N. Rose.)

RUSSO, Dr. GIUSEPPE. (See under Estacion Nacional Agronomica y Colegio de Agricultura, Moca, Dominica.)

RYERSON, MARGERY AUSTEN, New York City: 41 dry points and etchings for special exhibition from November 26 to December 30, 1928 (103753, loan).

RYNIKER, Dr. CHARLES, Tulsa, Okla.: 30 specimens of conodonts from the Coal Measures of Oklahoma (104186); approximately 500 specimens of Mississippian and Pennsylvanian fossils from Arkansas and Kansas (104847).

SALVADOR, GOVERNMENT OF:
Direccion General de Agricultura, San Salvador, Central America (through Dr. S. Calderon): 5 specimens of insects from Central America (102668).

SAN DIEGO, ZOOLOGICAL SOCIETY OF, San Diego, Calif. (through C. B. Feltham): Several specimens of a trematode (102572).

SANGSTER, CHARLES A., Abingdon, Hanover, British West Indies (through Mr. C. R. Orcutt): Earthenware vessels and human skeletal remains from a cave on the donor's estate (103642).

SASKATCHEWAN, UNIVERSITY OF, Saskatoon, Saskatchewan, Canada (through Dr. A. E. Cameron): 10 pinned specimens of flies and 2 vials of flies (one of larvae and the other of adults; 31 specimens of flies (102242, 104494, exchange).

SAYLOR, J. T., Washington, D. C.: Skeleton of a domestic cat (104842).

SCHAER, Mrs. HELEN HEINZE, Columbus, Ohio: Austrian, German, and Swedish coins (3 specimens) (106030).

SCHAIRER, J. F., Washington, D. C. (through Dr. Edgar T. Wherry): Plant (102739).

SCHELLENBERG, Dr. A. (See under Zoologisches Museum, Berlin, Germany.)

SCHENCK, HUBERT G., Stanford University, Calif.: Specimens of a new species of Foraminifera (103578); 20 specimens of fossil crustaceans from the Eocene limestone of old Guadalupe quicksilver mine, Santa Clara County, Calif. (104059).

SCHERNIKOW, ERNEST, San Francisco, Calif.: Crystals of tourmaline from California, a cut gem of tourmaline from Haddem Neck, Conn., and 2 cut stones of dumortierite (104413).

SCHIEFFELIN & CO., New York City: 4 specimens of official pharmaceutical preparations of cinchona products (105358).

SCHIRMER, Mrs. GRACE M., Washington, D. C. (through Library of Congress): Bugle and drum of the period of the Civil War (105806).

SCHMID, EDWARD S., Washington, D. C.: Specimen of Fischer's love bird and a weaver bird; red, blue, and yellow macaw and 2 weaver finches; 3 specimens of Lilian's love bird; 2 canary birds, white variety; specimen of slate-colored solitaire; 2 birds; African gray parrot (102555, 102847, 102973, 103340, 103997, 104264, 104688).

SCHMIDT, HEINRICH, San Jose, Costa Rica, Central America: 11 specimens of flies and 4 specimens of hymenopterous parasites (102694).

SCHMIDT, LAWRENCE R., New York City: Photograph of Clarence Chamberlain taking off for his 80-mile flight from the Steamship *Leviathan* to the American shore, made August 2, 1927, photographed by the donor from the *Leviathan* and autographed by Chamberlain and Charles Levine (104215).

SCHMITT, Dr. WALDO L., Washington, D. C.: 10 pairs of fish otoliths (104960).

SCHMITT, Dr. WALDO L.—Continued. (See also under H. S. Barber, and Smithsonian Institution, National Museum, collected by members of the staff and C. R. Shoemaker.)

SCHOEP, Prof. A. (See under Gand, Université de.)

SCOTT, ARCHIBALD J., Balboa, Canal Zone: 34 specimens of marine shells from the Pacific Ocean, vicinity of Panama City (101293); 54 marine shells from the Carribean coast of the Isthmus of Panama, and a fossil shell (102552).

SCOTT, JULIAN P., Woods Hole, Mass.: 532 portraits of scientific men, for exhibition from September 22 to 29, inclusive (103081, loan).

SCRIPPS INSTITUTION OF OCEANOGRAPHY: La Jolla, Calif.: The type specimen (holotype) of a fossil foraminifer (102568). (See also under Mexican Government, Direccion de Estudios Biologicos).

SEBASTIAN, R., St. Thomas, Virgin Islands: Snake and insect from St. Thomas (103142).

SELLERS & CO., (INC.), WILLIAM, Philadelphia, Pa.: 4 sectioned injectors showing developments in steam injector design from 1876 to 1929 (104292).

SHANNON, EARL V., Washington, D C.: Specimen of fish from Chesapeake Bay, Md. (102177); 10 fishes from the Potomac River (104161).

SHANNON, RAYMOND C., Washington, D. C.: Skull of an Indian child (probably pre-Columbian) found near Lima, Peru (102845); 5 bats, a snake and 20 lizards from Peru (102920, 103013); 4 crickets collected by Arturo Sainz, Lima, Peru (103373).

SHANTUNG CHRISTIAN UNIVERSITY, Tsinan, China (through Arthur P. Jacot): 17 insects from China (103559); 2 specimens of cicadas from China (105010).

SHARP & DOHME (INC.), Baltimore, Md.: 15 specimens of official pharmaceutical preparations of nux vomica (102228).

SHAW, Prof. J. N. (See under Oregon Agricultural College.)

SHELL PETROLEUM CORPORATION, Houston, Tex. (through J. C. Myers): Land and fresh water fossils including fragmentary vertebrates, from the Reynosa formation of De Witt County, Tex. (103732).

SHEN, CHARLES J. (See under Fan Memorial Institute of Biology, Peking, China.)

SHIDELER, Prof. W. H., Oxford, Ohio: 2 specimens of Silurian crinoids and a Devonian sponge (103145).

SHOEMAKER, C. R., Washington, D. C.: Approximately 20 isopods collected by himself and W. D. Appel in 1912–1916, in Washington, D. C., and vicinity (103366); 11 amphipods and 4 isopods from a small stream in a cypress swamp about 3 miles from Prince Fredericktown, Calvert County, Md. (105355).

SHUFELT, NORMAN D., Bluffton, Ind. (through E. B. Williamson): 10 specimens of crayfishes taken from the end of tile ditches emptying into Eight Mile Creek, Union Township, Wells County, Ind., by the donor and Mr. Williamson (105360).

SIGGERS, PAUL V., New Orleans, La.: 10 specimens of insects (103150).

SILBERLING, ALBERT C., Harlowton, Mont.: Jaw fragments and 2 molar teeth of mammalian fossils from Montana (103333, exchange).

SILVERTHORN, W. L., North Girard, Pa.: Plant, and specimen of cone-in-cone from Devil's Backbone, near North Girard, Pa. (102917, 103126).

SINCLAIR, JOSEPH H., New York City (through Dr. J. B. Reeside): 15 specimens of Upper Cretaceous invertebrates from Rio Coco, Ecuador (102996).

SINGER SEWING MACHINE CO., New York City: 8 sewing machine attachments and 17 examples of the work done by them; also a table type, hand operated sewing machine, Singer, No. 20 (106031).

SINGER MANUFACTURING CO., Elizabethport, Elizabethport Works, N. J.: "Exhibit skeleton, No. 101–3, revolving hook sewing machine," on walnut and nickel-plated stand and equipped with special rheostat for securing slow-speed operation (102008); (through factory No. 10, Bridgeport, Conn.); 8 models illustrating the development work of Allen B. Wilson, which finally resulted in the rotary hook type of sewing machine (103550 deposit).

SILVESTRI, Dr. FILIPPO, Portici (Naples), Italy: Beetle (cotype) (104454).

SIMPSON, Dr. EDWARD S., Government Chemical Laboratory, Perth, Western Australia: 4 specimens of minerals from Western Australia (104488, exchange); 9 specimens of minerals illustrative of the lithiophylite of Wodgina, and its various atmospheric alterations (104819).

SKVIRSKY, BORIS E., Washington, D. C.: Gold, silver, and bronze coins of the Soviet Union (10 specimens) (103850).

SLATER, Mrs. H. D., El Paso, Tex.: Plant and 4 specimens of ferns from Texas (102667, 102725).

SMITH, Mrs. CLARENCE M., San Francisco, Calif.: 8 lots of potsherds and a pottery bowl from various ruins near Jemez Springs, N. Mex. (103617).

SMITH, EDGAR. (See under C. E. Papworth.)

SMITH, H. J., Springfield, Long Island, N. Y.: Chinese mantis (insect) (102923).

SMITH, Dr. HUGH M., Bangkok, Siam: Collections from Siam, comprising 23 snakes, 25 lizards, 211 frogs, 2 turtles, and a caecilian, approximately 86 mollusks, 372 insects, 20 crabs, approximately 50 isopods, 45 shrimp, approximately 500 larval shrimp, 3 stomatopods, and 22 bats and a monkey fetus; 93 lizards, 15 snakes, 44 frogs, 1 caecilian, 1 crocodile, 3 mammals, approximately 50

SMITH, Dr. HUGH M.—Continued.
shrimps, approximately 12 crabs, 5 marine annelids, 1 scorpion, 5 myriapods, 45 mollusks and 223 insects; bird skins, skeletons and eggs, also mammals, insects, and mollusks and a lizard skin; 20 mammals, 232 bird skins, 2 bird skeletons, 37 reptiles and batrachians, 52 crustaceans, 200 mollusks, 40 parasitic worms, 503 insects, and 153 plants (102722, 103537, 104216, 105347).

SMITH, Dr. MALCOLM, London, England: 6 frogs from Siam (106015, exchange).

SMITHSONIAN INSTITUTION:
Bronze medal commemorating the presentation by the Italian nation and Government to the people and Government of the United States of a reproduction of the Roman fountain of the sea horses, unveiled in Philadelphia, June 6, 1928; silver medal commemorating the first New York to Paris flight by Capt. Charles A. Lindbergh in the *Spirit of St. Louis*, May 20–21, 1927; associate members' print of the Brooklyn Society of Etchers, by Louis Rosenberg; bronze copy of the Langley medal presented to the Wright brothers in 1909 (102038, 102039, 103655, 104238, deposit).

Bureau of American Ethnology: Several thousand anthropological specimens and small collections of mammals, plants, mollusks, from various localities in Alaska, secured by Henry B. Collins, jr., during the field season of 1928 (100592); small collection of archeological objects gathered by Charles T. Earle at an aboriginal camp site at Shaws Point, Fla. (102768); 2 textile fragments collected in the Canyon de Chelly, Ariz., by Dr. W. H. Spinks (102769); 62 ethnological specimens secured from the Hupa Indians of California, by E. G. Johnson (102896); 2 specimens of sheet mica collected from unidentified mounds in Ohio by the late Edwin H. Davis and presented to the bureau by Miss Betsey B. Davis (103344); pair of charms used by the Karok Indians of northern California to ward off pains and bewitchments, made by Mrs. Phoebe Maddux of the Karok tribe (103964) (through J. P. Harrington) 25 plants from California (105551); ethnological objects gathered from the Hupa Indians of California by E. G. Johnson and purchased from him by the bureau (105865).

SMITHSONIAN INSTITUTION—Con.
Bureau of American Ethonolygy—Continued.

National Museum, collected by members of the staff: Bartsch, Paul: 5 birds from Maryland (104862). Bartsch, Paul, and Dr. H. A. Pilsbry: 107 specimens of land shells from Oahu, Hawaiian Islands (104714). Boss, Norman H., and Remington Kellogg: Partial skeleton of fossil cetacean from Chesapeake Bay, Md. (102940). East, C. S.: Crayfish and a crab from Virginia Beach, together with 16 mammals and 71 bird skeletons from Virginia (102708). Gidley, J. W.: Collection of Pleistocene vertebrate remains and 4 stone implements from Melbourne, Fla. (106091). Gilmore, Charles W.: Fossil reptilian remains from the Two Medicine formation, Blackfeet Indian Reservation, Mont., and fossil mammal remains from the Paleocene, Eagle Mine, Bear Creek, Mont. (100526). Hough, Walter: Stone implements secured in the vicinity of Amarillo and Abilene, Tex. (105941). Leonard, E. C., and William L. Abbott: 14,750 plants, 126 speci-

SMITHSONIAN INSTITUTION—Con.

National Museum—Continued.

mens of woods, a quantity of land shells, and a small collection of insects (105088). Maloney, J. O.: Approximately 1,200 specimens of marine invertebrates, together with a collection of echinoderms, parasitic worms, mollusks, insects, fishes, and a reptile (103365). Resser, Charles E.: Approximately 525 slabs containing fossils from the Cambrian rocks of the Wyoming mountain ranges, collected during the summer of 1928 (102859). Rose, J. N., and Paul Russell, of the U. S. Department of Agriculture: 640 plants from Texas and Mexico (102243). Shamel, H. Harold: 37 mammals, 11 birds, 10 reptiles, and 1 mollusk from southeastern Ohio (103337). Shoemaker, C. R., and Waldo L. Schmitt: Miscellaneous collection of zoological material, comprising approximately 1,333 specimens of marine invertebrates, together with echinoderms, fishes, mollusks, coral, and insects (102997). Wetmore, A.: 2 specimens of plants from Maryland (103857). Wetmore, A., and George Marshall: 61 birds from North Carolina (104479). Wetmore, A., and W. M. Perrygo: 21 bird skins and a crab from Ocean City, Md. (103295).

National Museum, obtained by purchase: 100 plants from Trinidad (104066); 175 plants from Missouri (102288); pre-Columbian Indian pottery bowl from Florida (102682); 10 illustrations of historic machinery and inventors in the Conservatoire des Arts et Metiers, Paris, France (103427); map of Europe and America showing all of Col. Charles A. Lindbergh's flights (102743); 105 plants

SMITHSONIAN INSTITUTION—Con.

National Museum—Continued.

from the Hawaiian Islands (103299); plaster cast of Winged Isis (104640); 5 etchings (104181); 1,633 plants from Haiti (101383); 640 plants from Haiti (104991); surveyor's theodolite of about 1780, supposed to have been used by Orange Warner Ellis, on the New York-Vermont boundary (104762); archeological specimens and human skeletal remains from Kentucky (104046); 228 type photographs of plants in European herbaria (102153); colored photograph of Sellers injector, sectioned (104415); 25 specimens of mosses (103619); 97 plants from Uruguay (102145); casts of fossil bones (105425); 21 specimens of mosses (105436); Hough's American Woods, a collection of transverse, radial, and tangential sections of each of 350 American woods mounted in cardboard frames, and 14 parts each accompanied by text (103125); 21 small mammals from Siberia (105635); 2 ground squirrels (105636); type specimen of a fossil cetacean (102283); 12 seal skulls from Washington (103408); a cast each of the new reconstruction of the Le Moustier youth and of the interior of the cranium of the same (104831); banded chert blade found near Verdigre, Nebr. (103881); 8 etchings printed in color (106021); 2 stencil prints by Brunelleschi (106105); 883 plants from Cochin-china, collected by Chaplain and Mrs. Joseph Clemens (102898); early Otto gas engine, 1882 (104812); 3 photographs of a humpback whale captured outside the Golden Gate in San Francisco Bay, Calif. (104695); Chilkat dance

SMITHSONIAN INSTITUTION—Con.
National Museum—Continued.
robe and a pair of Chilkat rattle armlets (102152); 69 skeletons of birds from Kamerun, West Africa (102955); 3 specimens of a trilobite (103737); 101 plants from British Honduras (106057); 7 African fishes (103331); 108 skeletons of birds, 81 species, from Kamerun, West Africa (105265); fossil turtle and a partial skeleton of a small fossil horse (102778); partial skeleton of a plesiosaurian reptile, and skeleton of a fossil mammal (103367); 254 plants from Washington (102287); 510 plants from Argentina (100808); 360 plants from Argentina (105256); 412 plants from Argentina (105715).

National Museum, made in the Museum Laboratories: Reproduction of a clepsydra, or water thief timepiece, ancient type (103014); 3 colored plaster casts of an unfinished "tube" of banded slate, the original being the property of Dr. Charles Back, Montezuma, Ind. (104032); 3 plaster casts of a pottery cup which was excavated from No. 1 dolman of Bars, Commune of St. Martin L'Ars, Department of Vienne, France, by J. Townsend Russell, jr. (104455); 3 plaster casts of a zemé (104483); model of a sinking dish—a primitive time-telling device (105401); 2 examples of primitive time-telling by combustion, namely, Chinese punk and grass rope (105402).

National Zoological Park: 110 birds (102285, 103870, 106048); 60 mammals (102846, 103852, 104067, 104861, 105354, 105782): sea lion, otter, 2 flying opossums, kangaroo, and a tree opossum (104179); 2 eggs of black-backed magpie, and 2 eggs of California vulture (105395, 105859); spider monkey (106020).

SMITHSONIAN INSTITUTION—Con.
National Zoological Park—Contd.

SMOCK, Orville, Arkansas City, Kans. (through Mr. Walter Colvin): Skeleton of a female lesser prairie chicken from Kansas (103376).

SMYTHE, A. H. C., Cranbrook, British Columbia, Canada: Specimen of butterfly (101999).

SNOWBERGER, D. H., Payette, Idaho: Plant from Idaho (102165).

SOBEL, J. L., Liberty, Tex.: Stem section of a twining shrub (104241).

SOBRAL, Dr. José M., Buenos Aires, Argentina: Specimen of the mineral raphaelite (104694, exchange).

SOFIA, UNIVERSITY OF, Institute of Botany, Sofia, Bulgaria: 100 plants (105385, exchange).

SPEAIGHT, Richard N., London, England: 6 portrait and figure studies (104228).

SPRINGER FUND, Frank, Smithsonian Institution: 3 starfishes and 5 crinoids from the Ordovician of Minnesota (103738).

STANDARD TEXTILE PRODUCTS CO., THE, New York City: Specimen of leather substitute known as "synthetic calfskin," made from spruce wood pulp (102656).

STANFORD UNIVERSITY, Stanford University, Calif. (through Mrs. Ida S. Oldroyd): 2 type specimens of fossil crabs (105352).

STATE, DEPARTMENT OF: Film showing the exploits of Col. Charles Lindbergh from the time he left for Paris (104966); photostat copies of "Extract from a map of the Country, explored in the Years 1817 and 1818 by Mr. Johnson," and "A Map of the Boundary line explored in 1817 by John Johnson, United States Surveyor (105755).

STEARNS, FREDERICK, & CO., Detroit, Mich.: 32 specimens of vegetable drug constituents (105154).

STEELE, E. S., Washington, D. C.: 1,274 plants from North Carolina, and the eastern United States (102170, 106076).

STEEVER, Prof. M. D., Easton, Pa.: 14 Philippine weapons (97077).

STERNBERG, GEORGE F., Hays, Kans.: Teeth, vertebrae, and cartilage of the skull of a fossil shark from the Upper Cretaceous of Kansas (104871).

STEVENS, Miss BELLE A. (See under Washington, University of, Seattle, Wash.

STEWART, Prof. M. A. (See under Rice Institute, the, Houston, Tex.

STICKNEY, FENNER. (See under Agriculture, Department of, Bureau of Entomology.)

STOCKBRIDGE, Mrs. HENRY, Baltimore, Md.: 138 land shells, many of them rare, from the Hawaiian Islands; also 116 oil paintings of fishes from the Pacific Ocean, particularly the Hawaiian Islands (105917).

STORK, Prof. H. E., Northfield, Minn: 121 specimens of pteridophyta from Costa Rica (104509).

STOTTLEMEYER, Miss MARGARET A. R., Frederick, Md.: Bennington pitcher dated 1849, presented in honor of the donor's father and mother, Jonathan and Susan Stottlemeyer (106043).

STRAUSS, CARL, Laax, Switzerland: 41 etchings by the lender for special exhibition from October 29 to November 25, 1928 (103324, loan).

STYLES, Mr. CASSIUS HAYWARD, Los Gatos, Calif. (through Mr. W. O. Robinson): 15 pieces of archery tackle, including a pair of yew billets, a fine yew bow, 6 target arrows, and 6 hunting arrows (103605, loan).

SUK, Prof. V., Brno, Czechoslovakia: 10 face casts of Eskimo, 1 face cast of a gipsy, 3 casts of teeth, and 9 skulls from Moravia (104837, exchange).

SWALES FUND, Smithsonian Institution: Skin of a bird from China (102624); 6 birds, 3 species, chiefly from Madagascar (103010); pair of birds, francolins, new to the Museum collections (104147); 14 bird skins and 1 trunk skeleton, including 6 species and 1 genus new to the Museum collections (104461); hawk from Morocco (104843); 18 bird skins, including 16 species, new to the Museum collections (105031); skin of Andaman tree pie (a bird), new to the Museum collection (105554).

SWALLEN, JASON R., Washington, D. C.: 203 plants from Michigan (102901).

SWINGLE, C. F., Washington, D. C.: Three fragments of egg shell of aepyornis from Madagascar (104468).

SWINGLE, Dr. WALTER T. (See under Agriculture, Department of, Bureau of Plant Industry.)

TANNER, Dr. VASCO M. (See under Brigham Young University.)

TANNERS' COUNCIL OF AMERICA (INC.), New York City. (See under National Aniline & Chemical Co., Inc.)

TAUNAY, Dr. AFFONSO DE E., Sao Paulo, Brazil: Specimen of dwarf tinamou from Brazil (102773).

TAYLOR, FRANK A., Washington, D. C.: Modern Chinese swanpan (abacus) to be used in the exhibit of calculating machines (104133, loan).

TAYLOR, Mrs. VAL. (See under Colbert Chapter, Alabama Society, Daughters of the American Revolution.)

TAYLOR, Dr. WALTER P. (See under Agriculture, Department of, Bureau of Biological Survey.)

TECHNISCHE HOOGESCHOOL, LABORATORIUM VOOR DELFSTOFKUNDE, Delft, Holland: 2 specimens of minerals—truscottite and scorodite (103890, exchange).

TEISSEIRE, Prof. AUGUSTE, Colonia, Uruguay: 38 land and fresh-water shells from Uruguay and 9 crustaceans from Rio de la Plata, Baie de Colonia, Uruguay (100155).

TEXAS AGRICULTURAL EXPERIMENT STATION, San Antonio, Tex. (through H. B. Parks): 6 specimens of moths from Texas (101872).

TEXAS, STATE DEPARTMENT OF AGRICULTURE, Austin, Tex. (through Mr. Tom O'Neill): 3 scale insects from Texas (105145).

THOMAS, Mr. Bob, Globe, Ariz.: 4 beetles from Arizona (105033).

THOMAS, Mrs. Ruth, G., El Paso, Tex. (See under Mrs. Katherine G. Buddy.)

THOMPSON, J. W., Seattle, Wash.: 503 plants from Oregon (104017, 104526); 462 specimens of Oregon plants (105260, exchange); fern from California (104846).

THOMPSON, Col. W. B., Yonkers, N. Y.: Slab of aventurine quartz (105257, exchange).

THOMSON, Prof. Arthur. (See under University Museum, Department of Anatomy, Oxford, England.)

THOREK, Dr. Max, Chicago, Ill.: 66 pictorial prints for special exhibition during the month of June, 1929 (105760, loan).

THORNE, Miss Diana, New York City: 3 dry points—Please Make Me an Airman; Ship of Dreams, and Lin'berg (102906).

TILLOTSON MANUFACTURING CO. (INC.), Toledo, Ohio: 2 modern automobile carbureters, sectioned and nickel-plated (105766, loan).

TIMBERLAKE, P. H., Riverside, Calif.: 173 specimens of bees, representing holotypes, allotypes, and paratypes of 32 species (102704).

TIMES-MIRROR PRINTING & BINDING HOUSE, Los Angeles, Calif.: Book entitled "Twelve Pioneers of Los Angeles," a very fine example of book binding and printing (104180).

TOKYO, IMPERIAL UNIVERSITY OF, Geological Institute, Tokyo, Japan: 5 specimens of minerals from Japan (103869).

TOLSON, Mrs. Holtzman, Washington, D. C.: 5 examples of Chelsea, Rookwood, and other antique cream pitchers (105918).

TOMKINS, Ivan R., Savannah, Ga.: Fragmentary fossil remains from the bed of the Savannah River, near Savannah, Ga. (101994); 11 eggs of Worthington's marsh wren from Georgia (102712); small collection of fossils with associated antifacts dredged from the Savannah River (104834).

TOPPING, D. Le Roy, Honolulu, Hawaii: Approximately 2,800 specimens of ferns and flowering plants (104845).

TORRES, Manuel Perez, San Juan, P. R.: Beetle and plant from Porto Rico (102011, 102161).

TOWNSEND, Dr. C. H. T., Lima, Peru: 372 specimens of flies, representing 85 species, 46 of which are represented by types (104011); 364 specimens of flies from South America (105253). Exchange.

TREASURY DEPARTMENT:

Bureau of the Mint: (through Mr. Robert G. Grant) 41 specimens of ancient and modern coins (102057); bronze medalet commemorating the services of Nathan Hale (103993); United States coins struck at the Philadelphia, Denver, and San Francisco mints in 1928 (34 specimens) (104196) 2 bronze copies of the gold medal presented by Congress to the Wright brothers on March 4, 1909, in recognition of their success in navigating the air (104263); coins of the Irish Free State struck in 1928 (8 specimens) (104416); 2 United States bronze 1-cent pieces coined in 1922 (104860).

TRIPP, Henry S., Bishop, Calif.: Examples of cobalt ore from near Bishop (102894).

TRISTAN, Prof. J. Fidele, San José, Costa Rica: Small collection of insects from Central America (101139).

TROVINGER, Raymond T., Hagerstown, Md.: Skin of great blue heron from Maryland (104266).

TRUITT, Prof. R. V., and Mr. A. M. HALPER, College Park, Md.: 2 crabs and a "Cling-fish" collected by the donors in Chesapeake Bay (103106).

TUCKER, J. H., Sarasota, Fla.: Photograph of a stomatopod (105364).

TYPOGRAPHIC CRAFTSMEN, New York City: Book entitled "Some Sayings of Benjamin Franklin," No. 94 of an edition of 700 copies, and one other example of fine printing (103353).

ULKE, Prof. TITUS, Washington, D. C.: Bat and 4 specimens of mollusks from British Columbia (102742, 102747).

UNITED SHOE MACHINERY CORPORATION, Boston, Mass.: A series of specimens arranged to illustrate the steps in the manufacture of shoes by machinery, according to each of the following seven processes: Pegged shoe; standard screw shoe; turned shoe; stitch-down shoe; McKay sewed shoe; Littleway process shoe; and the Goodyear welt shoe (104007).

UNITED SPANISH WAR VETERANS, Department of the District of Columbia (through Mr. E. Byrd Doran): Naval and military insignia and miscellaneous relics of the period of the Spanish-American War (103123, loan).

UNIVERSITETETS BOTANISKE MUSEUM, Copenhagen, Denmark: 49 specimens and 2 photographs of ferns (104126); 4 ferns from Peru (104156). Exchange.

UNIVERSITETETS MINERALOGISKE-GEOLOGISKE MUSEUM, Copenhagen, Denmark: Slice weighing 1,065 grams of the meteoric iron of Savik, North Greenland (105847, exchange).

UNIVERSITY, THE, Bristol England: Specimen of fossil coral (103976, exchange).

UNIVERSITY MUSEUM, Department of Human Anatomy, Oxford, England (through Prof. Arthur Thomson): Set of casts of the portions of the skull of a child found in a rock shelter in the Rock of Gibraltar in 1926 (104679, exchange).

URITA, T., South Saghalin, Japan: 76 marine and fresh-water shells from Aniwa Bay, South Saghalin, Japan (103840, 104504).

UTAH AGRICULTURAL COLLEGE, Logan, Utah: 3 flies (103397), 11 insects (104422); (through George F. Knowlton) 5 insects; 5 insects from Utah (105628, 105378).

VALERIO, Prof. MANUEL, San Jose, Costa Rica, Central America: 197 miscellaneous insects from Central America (85570); 15 insects, a jellyfish, 15 plants, and a holothurian from Costa Rica (99352); 2 marine shells from Punta Arenas, Costa Rica, 1 being the type of a new species; 4 frogs and 3 lizards, and 95 insects from Costa Rica (101082); 95 insects, 4 snakes, 13 invertebrates from Costa Rica (101283); crab from Honduras and 1 from Costa Rica; also 20 amphibians from Costa Rica (101505); 2 frogs and a crustacean from Costa Rica (102027); shrimp from Costa Rica (102227); shrimp from Rio Canas, Guanacaste Province; 3 frogs and 4 mushrooms from Costa Rica (103130); 29 specimens of lichens from Costa Rica (103191); 5 specimens of algae and a crab from Costa Rica (103652); (through Mr. Edwin B. Bartram) 149 specimens of mosses from Costa Rica (103775, 106058); 20 insects and 11 fungi from Costa Rica (104230); 127 insects, 1 land shell, 4 frogs, 1 lizard, and 2 snakes; 15 specimens of ferns; 5 tree frogs and 73 insects, all from Costa Rica (101136, 104408, 104420, 105383); 194 miscellaneous insects (101837, 101997); 17 crustaceans, 5 ferns, 1 beetle, 11 land shells, 5 frogs, 11 lizards, 1 snake, 1 peripatus, and a worm; 8 plants (algae and fungi), 6 specimens, 3 species, of slugs, 1 frog, and 3 terrestrial isopods; 4 plants, a crab, and a planarian; 16 plants from Costa

VALERIO, Prof. MANUEL—Continued. Rica, a leech, and approximately 6 earthworms (102782, 103551, 104064, 104677).

VALKENBERG, H. L. VAN, Mayaguez, P. R. (through Agriculture, Department of, Bureau of Animal Industry, Washington, D. C.): 50 specimens of pond snails (103862).

VALLE Y PEREZ, Dr. PEDRO DEL, Vinales, Province of Pinar del Rio, Cuba: 21 land shells from Cuba (103172).

VANDERBILT UNIVERSITY, School of Medicine, Nashville, Tenn.: Rat mite and approximately 12 specimens of ostracods from Nashville, Tenn. (103878).

VAN TYNE, J., Ann Arbor, Mich.: Specimen of fly (100186).

VAUGHAN, Dr. T. WAYLAND. (See under Florida State Geological Survey.)

VAUPEL, E. H., Cincinnati, Ohio: Approximately 500 specimens of fossils from southwestern Ohio (102207); approximately 500 specimens of Richmond and 600 Upper Medinan fossils from southeastern Ohio (103335).

VIOSCA, PERCY, Jr., New Orleans, La.: Type specimen of a Bullsnake from Longleaf, La. (104403).

VIRGINIA, UNIVERSITY OF, Charlottesville, Va. (through Prof. Wilbur A. Nelson): A rare species of echinoid from the Mississippian rocks of Tennessee (105162, exchange).

VONSEN, M., Petaluma, Calif.: 2 specimens of the mineral meyerhofferite from Mount Blanco, Calif., and examples of the mineral hydroboracite from the same locality (102272, 103739). Exchange.

WAILES, G. H., Nanaimo, British Columbia, Canada: 13 specimens, 5 species, of amphipods, collected by the donor; 11 specimens of amphipods, and 22 specimens, 5 species, of amphipods and 3 specimens, 1 species, of mysids, all from British Columbia (102951, 103156, 104050). (See also under Canadian Government, Biological Board of Canada.)

WAILES, G. H.—Continued.

WAKELAND, CLAUDE. (See under Idaho, University of.)

WALCOTT, Mrs. CHARLES D., Washington, D. C.: Plant from New Mexico (104961).

WALES, GEORGE C., Boston, Mass. (through Goodspeed's Book Shop): 52 etchings, drawings, and lithographs by the lender, for special exhibition from December 31, 1928, to January 27, 1929 (104040, loan); 5 etchings, "Yachts and Barges," "Morning Mist," "Cutting In," and "Action of 1812"; also a pencil drawing "Stand By to Let Go," all the work of the donor (104430).

WALES, JOSEPH H., Claremont, Calif.: 23 specimens of crayfish from the Santa Ana River, near Riverside, Calif. (101151).

WALKER, Dr. JAMES W., Chicago, Ill.: Approximately 50 land shells, locality unknown (104019).

WALTER RATHBONE BACON SCHOLARSHIP, Smithsonian Institution (through Dr. Paul Bartsch): 200,000 mollusks, 22 mammals (17 alcoholic and 5 skins), 85 bird skins, 3 birds' eggs, 11 snakes, 13 frogs, 72 lizards, and 8 specimens of crustaceans, collected in Cuba, and 1 bird skin from Georgia (101827).

WALTHAM WATCH CO., Waltham, Mass.: Early watch-making machine (104105).

WAR DEPARTMENT:

Air Corps: Wright Whirlwind aircraft engine, the center engine of the trimotored Fokker monoplane *Question Mark*, which made a continuous flight of 150 hours, 40 minutes, and 15 seconds, January 1–7, 1929, at Los Angeles, Calif., being refueled in flight (104913).

Engineer Corps: Model of 60-inch open searchlight and mobile searchlight power unit (106074).

WARD'S NATURAL SCIENCE ESTABLISHMENT, Rochester, N. Y.: The Webster collection of types and other Devonian invertebrates; section weighing 11,995 grams of the Weekeroo, South Australia, meteoric iron (101848, 105165). Exchange.

WARDEN, CHARLES G., Washington, D. C.: Outrigger rowboat *Saunterer* used on the Potomac River about 1888 (102391).

WARMBATH, J. B., Washington, D. C.: Specimen of mantis (102843).

WASHINGTON, Dr. HENRY S., Washington, D. C.: 3 specimens of hepatics (102899, exchange).

WASHINGTON, UNIVERSITY OF, Seattle, Wash. (through Miss Belle A. Stevens): Fossil crab from Chehalis County, Wash. (102144).

WATKINS, J. T., Washington, D. C.: 5 stone implements from the shore of Clear Lake, Lake County, Calif. (103632).

WEATHERBY, C. A. (See under Harvard University, Gray Herbarium.)

WEBER, Mrs. CATHERINE, Washington, D. C.: Specimen of white variety of canary (104015).

WEBSTER, Dr. G. V., Carthage, Mo. (through Dr. Riley D. Moore): 2 of the earliest books on the subject of osteopathy, entitled "Osteopathy, the New Science of Healing," and "A Manual of Osteopathic Therapeutics," for addition to the history of osteopathy collection (104211).

WEBSTER, WILLIAM H., Barton-on-Sea, Hants, England: 81 pairs of fish otoliths (191639, exchange).

WELCH, D'ALTE A., Baltimore, Md.: 4 mollusks and 23 specimens, 6 species, of land shells from Cuba (103950, 105952, exchange); 4 specimens, 1 species, of mollusks from Cuba 105015).

WELLS, WAYNE W., Ashland, Oreg.: 2 crabs, male and female, type and paratype, respectively (102950).

WESTERN BORAX CO., Los Angeles, Calif. (through Henry Blumenberg): Specimen of the borax mineral ulexite from 6 miles northwest of Kramer Station, Calif. (102651).

WETMORE, Dr. A., Washington, D.C.: Specimen of Nelson's sparrow, 8 bird skins and 3 bird skeletons, all from Maryland (104037, 105756); skeleton of a Nashville warbler from Massachusetts (105955). (See also under Smithsonian Institution, National Museum, collected by members of the staff.)

WHARRAM, S. V., Ashtabula, Ohio: 3 specimens of naiad from Arkansas (102654).

WHEATON, Lieut. Col. FRANCIS B., Washington, D. C.: Military insignia owned by Surg. Francis L. Wheaton, United States Army, Brig. Gen. Frank Wheaton, United States Army, and Lieut. Col. Charles Wheaton, United States Army (102970).

WHEELER, Dr. A. S., and Dr. RALPH W. BOST, Chapel Hill, N. C.: 12 specimens for the Loeb collection of chemical types (106103).

WHEELER, Prof. GEORGE C. (See under North Dakota, University of.)

WHELAN, Prof. DON. B. (See under Nebraska, University of.)

WHERRY, Dr. EDGAR T., Washington, D. C.: 21 plants (102736, 103864); specimen of moss from Vermont (103011); 6 plants from the District of Columbia (103135); specimen of fern from Alabama (105920). (See also under J. E. Benedict, jr., Prof. H. M. Jennison, and J. F. Schairer.)

WHITE, Dr. DAVID, Washington, D.C.: Skull of an Eskimo woman, collected by the donor in 1897 from an old site near Patoat, Nugsuak Peninsula, west coast of Greenland (104978).

WHITE, Prof. WILLIAM E. (See under Alabama, University of.)

WHITEMAN, RIDGLEY, Clovis, N. Mex.: Flint spearhead found near Clovis (104449).

WHITFIELD FOODS (INC.), Chicago, Ill.: 15 specimens of dehydrated foods and vegetables (100802).

WHITRIDGE, Mrs. MORRIS, Baltimore, Md.: Dress worn by Martha Washington (106095).

WICKHAM, Prof. H. F., Iowa City, Iowa: 5 specimens of peripatus from New Zealand, collected by Dayton Stoner, of the Fiji-New Zealand Expedition of the University of Iowa, in August, 1922 (105775, exchange).

WILKINSON, D. S. (See under British Government, Imperial Bureau of Entomology.)

WILLIAMS, ROBERT H., Glendale, Calif. (through Dr. Riley D. Moore): Photograph of Dr. A. T. Still, "the founder of osteopathy," for addition to the history of osteopathy collection (104210).

WILLIAMS, Prof. SAMUEL H., Pittsburgh, Pa.: Skeleton of a dolphin from British Guiana, South America (104397).

WILLIAMSON, E. B. (See under Norman D. Shufelt.)

WILLNER, W. H., Washington, D. C. (through W. O. Robinson): Snakewood archery bow (103974, loan).

WILSON, Miss DAMARIS, Winter Park, Fla.: Specimen of mollusk commonly called a sea hare (101084).

WILSON, G. Fox. (See under Royal Horticultural Society Gardens.)

WINDSOR PRESS, THE, San Francisco, Calif.: Book entitled "The Triumphs of Petrarch" (103341).

WINTON ENGINE CO., THE, Cleveland, Ohio: 3 Winton automobiles, namely, first machine made and sold by Winton, March 24, 1898; Winton racing car, *Bullet No. 1*, 4 cylinders, built in 1901–2, and Winton racing car, *Bullet No. 2*, 8 cylinders, built 1902–3 (105119).

WISS & SONS CO., J., Newark, N. J.: A series of 8 specimens showing a pair of shears in various stages of manufacture (102972).

WOLTMANN, W., Los Angeles, Calif.: 2 mineral specimens—chabazite and siderite (104680).

WOOD, Rev. CHARLES, Washington, D. C.: Plant (103179).

WOOD, Mrs. LEONARD, Washington, D. C.: Military relics of Maj. Gen. Leonard Wood, United States Army (105588).

WOODALL, Dr. P. H., Birmingham, Ala. (through Dr. Riley D. Moore): 1 copy of Woodall's "Intra-Pelvic Technic, or Manipulative Surgery of the Pelvic Organs," for addition to the exhibit of the history of osteopathy (103098).

WOODBURY, A. M. (See under Interior, Department of, National Park Service.)

WOODBURY, CHARLES H., Boston, Mass. (through Frederick Keppel & Co.): 62 etchings by Mr. Woodbury, for special exhibition during the month of October, 1928 (102965, loan).

WOODHOUSE, Dr. SAMUEL W., Jr., Philadelphia, Pa.: Daguerreotype of Dr. Samuel W. Woodhouse and photograph of Doctor Woodhouse and Edward Bowers, made during the Sitgreaves expedition, 1851 (105434).

WOODWARD, E. N., Davy, W. Va.: Mole cricket from West Virginia (102988).

WORMSER, MORITZ. (See under American Numismatic Association.)

WRIGHT, Dr. F. E., Washington, D. C.: Stickpin with head carved from crocidolite, from South Africa (105997).

WU, CHENFU F. (See under Yenching University, Peking, China.)

WYCKOFF, J. M. (See under Agriculture, Department of, Forest Service.)

WYETH (INC.), JOHN & BRO., Philadelphia, Pa.: 9 specimens of cinchona pharmaceutical preparations (103320).

YALE & TOWNE MANUFACTURING CO., THE, Stamford, Conn.: 4 specimens of hoisting apparatus, 1 com-

YALE & TOWNE MANUFACTURING CO., THE—Continued.
plete and the other 3 sectionalized, 1 of the latter being motor driven (99669).

YALE UNIVERSITY, School of Forestry, New Haven, Conn. (through Prof. Samuel J. Record): 5 woods collected in Japan by Prof. R. K. Beattie, of the United States Bureau of Plant Industry (105246, exchange).

YANG CHING, Peking Union Medical College, Peking, China: 14 specimens of fishes collected in the vicinity of Yenching University (103539).

YASTE, W. J., Washington, D. C.: Skeleton of a male Indian found near Lydia, Md. (103631).

YEATMAN, Lieut. Commander P. W., United States Navy, Washington, D. C.: Spyglass owned during the War of the Revolution by Gen. George Washington (104808, loan).

YENCHING UNIVERSITY, Peking, China (through Chenfu F. Wu): 14 insects (102807); 12 crickets from China (103613).

YOKOYAMA, Ippei, Osaka, Japan (through Dr. Chiyomatsu Ishikawa): Skeleton of a sperm whale from Japan (98925).

YOKOYAMA, Ippei—Continued.

YOUNG, Dr. P. A., Bozeman, Mont.: Invertebrate fossils from Mount Baldy, near Bozeman, Mont. (101701).

YOUNG, Miss M., Washington, D. C.: 3 specimens of fishes—2 gold-moon fishes and 1 guppy (104157).

ZAPPULLA, Frank S., Washington, D. C.: Glass plate commemorating the death of Ulysses S. Grant, 1885 (104473); an old fan owned by the grandmother of the wife of the donor (104683).

ZETEK, James, Ancon, Canal Zone: Crab from Barro Colorado Island, collected by O. L. Williams, of the University of California (102758).

ZOOLOGISCH MUSEUM, Amsterdam, Holland (through Mr. J. B. Corporaal, Curator): 87 specimens representing 86 species of beetles (103935, exchange).

ZOOLOGISCHES MUSEUM DER UNIVERSITAT, Berlin, Germany (through Dr. A. Schellenberg): 3 amphipods from Greenland (104682, exchange); skin of a bird (102250, exchange).

LIST OF PUBLICATIONS ISSUED BY THE UNITED STATES NATIONAL MUSEUM DURING THE FISCAL YEAR 1928–29

REPORT

Report on the progress and condition of the United States National Museum for the year ended June 30, 1928.
8vo., pp. i–ix, 1–216, frontispiece.

PROCEEDINGS

Proceedings of the United States National Museum. Volume 71.
8vo., pp. i–xiii, 1–574, arts. 1–24, pls. 1–82, 71 figs.

Proceedings of the United States National Museum. Volume 72.
8vo., pp. i–xv, 1–560, arts. 1–25, pls. 1–86, 64 figs.

BULLETINS

No. 100, vol. 1, Contributions to the biology of the Philippine Archipelago and adjacent regions. Papers on collections gathered by the *Albatross*, Philippine Expedition 1907–1910.
8vo., pp. i–xv, 1–649, pls. 1–54, 193 figs.

No. 100, vol. 8. Contributions to the biology of the Philippine Archipelago and adjacent regions. The fishes of the series Capriformes, Ephippiformes, and Squamipennes, collected by the United States Bureau of Fisheries steamer *Albatross*, chiefly in Philippine seas and adjacent waters. By Henry W. Fowler and Barton A. Bean.
8vo., pp. 1–xi, 1–352, 25 figs.

No. 104. The Foraminifera of the Atlantic Ocean. Part 6. Miliolidae, Ophthalmidiidae, and Fischerinidae. By Joseph Augustine Cushman.
8vo., pp. i–viii, 1–129, pls. 1–22.

No. 145. A revision of the North American species of Buprestid beetles belonging to the genus Agrilus. By W. S. Fisher.
8vo., pp. i–v, 1–347, pls. 1–11.

No. 146. Life histories of North American shore birds. Order Limicolae (Part 2). By Arthur Cleveland Bent.
8vo., pp. i–ix, 1–412, pls. 1–66.

PAPERS PUBLISHED IN SEPARATE FORM

FROM THE BULLETINS

From volume 26. Contributions from the United States National Herbarium. Part 3. Costa Rican mosses collected by Paul C. Standley in 1924–1926. By Edwin B. Bartram.
8vo., pp. i–x, 51–114, 39 figs.

From volume 28. Contributions from the United States National Herbarium Part 1, The North American species of Paspalum. By Agnes Chase.
8vo., pp. i–xvii, 1–310, 142 figs.

FROM VOLUME 73 OF THE PROCEEDINGS

No. 2733. A revision of the lizards of the genus Ctenosaura. By John Wendell Bailey.
Art. 12, pp. 1–58, pls. 1–30.

No. 2736. Contribution to the comparative anatomy of the eared and earless seals (genera Zalophus and Phoca). By A. Brazier Howell.
Art. 15, pp. 1–142, pl. 1, figs. 1–30.

No. 2738. Field notes on vertebrates collected by the Smithsonian-Chrysler East African Expedition of 1926. By Arthur Loveridge.
Art. 17, pp. 1–69, pls. 1–4.

No. 2741. The Florida tree snails of the genus Liguus. By Charles Torrey Simpson.
Art. 20, pp. 1–44, map, pls. 1–4.

No. 2743. Tertiary fossil plants from the Argentine Republic. By Edward W. Berry.
Art. 22, pp. 1–27, pls. 1–5, fig. 1.

FROM VOLUME 74 OF THE PROCEEDINGS

No. 2746. New Diptera or two-winged flies from South America. By J. M. Aldrich.
Art. 1, pp. 1–25, figs. 1, 2.

No. 2747. Three new species of two-winged flies of the family Bombyliidae from India. By J. M. Aldrich.
Art. 2, pp. 1–3.

No. 2748. New fossil pearly fresh-water mussels from deposits on the Upper Amazon of Peru. By William B. Marshall.
Art. 3, pp. 1–7, pl. 1.

No. 2749. Two new nematode worms from rodents. By Emmett W. Price.
Art. 4, pp. 1–5, pls. 1, 2.

No. 2750. Fossil footprints from the Fort Union (Paleocene) of Montana. By Charles W. Gilmore.
Art. 5, pp. 1–4, pls. 1–3, fig. 1.

No. 2751. Notes on some oriental Sapromyzid flies (Diptera), with particular reference to the Philippine species. By J. R. Malloch.
Art. 6, pp. 1–97, pls. 1–6.

No. 2752. A revision of the wood-warbler genus Basileuterus and its allies. By W. E. Clyde Todd.
Art. 7, pp. 1–95, fig. 1.

No. 2753. Five new parasitic flies reared from beetles in China and India. By J. M. Aldrich.
Art. 8, pp. 1–7.

No. 2754. Moniezia, a genus of cestode worms, and the proposed reduction of its species to three. By E. Leonard Taylor.
Art. 9, pp. 1–9, pls. 1–5.

No. 2755. Tropical American Diptera or two-winged flies of the family Dolichopodidae from Central and South America. By M. C. Van Duzee.
Art. 10, pp. 1–64, pls. 1, 2.

No. 2756. Synopsis and description of North American tadpoles. By A. H. Wright.
Art. 11, pp. 1–70, pls. 1–9.

No. 2757. A new polyychaetous annelid of the genus Phyllodoce from the west coast of Costa Rica. By Aaron L. Treadwell.
Art. 12, pp. 1–3, figs. 1–3.

No. 2758. Tschermigite, ammoniojarosite, epsomite, celestite, and paligorskite from southern Utah. By Earl V. Shannon.
Art. 13, pp. 1–12, fig. 1.

No. 2759. New fossil mollusks from the Miocene of Virginia and North Carolina, with a brief outline of the divisions of the Chesapeake group. By Wendell C. Mansfield.
Art. 14, pp. 1–11, pls. 1–5.

No. 2760. The fossil crinoid genus Vasocrinus Lyon. By Edwin Kirk.
Art. 15, pp. 1–16, pls. 1, 2.

No. 2761. A revision of the North American Ichneumon-flies of the genus Mesostenus and related genera. By R. A. Cushman.
Art. 16, pp. 1–58, figs. 1–8.

No. 2762. New fresh-water and marine bivalve shells from Brazil and Uruguay. By William B. Marshall.
Art. 17, pp. 1–7, pls. 1–4.

No. 2763. Bathmopterus, a new fossil gasteropod genus from the Silurian of Alaska. By Edwin Kirk.
Art. 18, pp. 1–4, pl. 1.

No. 2764. Further studies of types of American muscoid flies in the collection of the Vienna Natural History Museum. By J. M. Aldrich.
Art. 19, pp. 1–34, figs. 1, 2.

No. 2765. A new species of trichostrongylid worm of the genus Cooperia from the carabao in the Philippine Islands, with a review of the genus. By Benjamin Schwartz.
Art. 20, pp. 1–5, pl. 1, fig. 1.

No. 2766. Miargyrite silver ore from the Randsburg district, California. By Earl V. Shannon.
Art. 21, pp. 1–10, figs. 1–3.

No. 2767. Two new frogs from Jamaica. By Emmett Reid Dunn.
Art. 22, pp. 1, 2.

No. 2768. Mineralogy and geology of Cerro Mercado, Durango, Mexico. By William F. Foshag.
Art. 23, pp. 1–27, pls. 1–4, figs. 1–3.

No. 2769. Notes and new species of American moths of the genus Scoparia Haworth. By Harrison G. Dyar.
Art. 24, pp. 1–9.

No. 2770. A new salamander from southern California. By Emmett Reid Dunn.
Art. 25, pp. 1–3.

No. 2771. The gums of the porpoise Phocoenoides dalli (True). By Gerrit S. Miller, jr.
Art. 26, pp. 1–4, pls. 1–4.

FROM VOLUME 75 OF THE PROCEEDINGS

No. 2772. Mammals from China in the collections of the United States National Museum. By A. Brazier Howell.
Art. 1, pp. 1–82, pls. 1–10.

No. 2773. Beetle larvae of the subfamily Galerucinae. By Adam G. Böving.
Art. 2, pp. 1–48, pls. 1–5, figs. 1–3.

No. 2774. On some new and interesting species of water beetles of the family Gyrinidae in the United States National Museum. By Georg Ochs.
Art. 3, pp. 1–6.

No. 2775. A review of the birds of the islands of Siberut and Sipora, Mentawi group (Spolia mentawiensia). By J. H. Riley.
Art. 4, pp. 1–45, pl. 1.

No. 2776. A generic revision of the fossorial wasps of the tribes Stizini and Bembicini, with notes and descriptions of new species. By John Bernard Parker.
Art. 5, pp. 1–203, pls. 1–15.

No. 2777. Some new genera and species of nematode worms, Filarioidea, from animals dying in the Calcutta Zoological Garden. By Asa C. Chandler.
Art. 6, pp. 1–10, pls. 1–3.

No. 2778. A revision of the American two-winged flies of the Psychodid subfamily Bruchomyinae. By Charles P. Alexander.
Art. 7, pp. 1–9, figs. 1, 2.

No. 2779. Notes on some North American moths of the subfamily Eucosminae. By Carl Heinrich.
Art. 8, pp. 1–23, pls. 1–5.

No. 2780. Recent Foraminifera from off Juan Fernandez Islands. By Joseph A. Cushman and R. T. D. Wickenden.
Art. 9, pp. 1–16, pls. 1–6.

No. 2781. A summary of the earthworm fauna of Burma, with descriptions of fourteen new species. By G. E. Gates.
Art. 10, pp. 1–41, figs. 1–24.

No. 2782. A contribution to our knowledge of the anatomy of the fresh water mussels of the District of Columbia. By Lucy Reardon.
Art. 11, pp. 1–12, pls. 1–5.

No. 2783. A new liver fluke from a monkey and new parasitic roundworms from various African animals. By J. H. Sandground.
Art. 12, pp. 1–11, pls. 1, 2.

No. 2784. Bugs of the family Miridae of the District of Columbia and vicinity. By H. H. Knight and W. L. McAtee.
Art. 13, pp. 1–27.

No. 2785. Distribution and key of the North American copepods of the genus Diaptomus, with the description of a new species. By C. Dwight Marsh.
Art. 14, pp. 1–27, figs. 1–16.

No. 2786. A new crab from the Eocene of Florida. By Mary J. Rathbun.
Art. 15, pp. 1–4, pls. 1–3.

No. 2787. A newly found meteoric stone reported by W. B. Lang from Peck's Spring, Midland County, Texas. By George P. Merrill. (With chemical analysis by F. A. Gonyer.)
Art. 16, pp. 1, 2, pl. 1.

No. 2788. A new nematode, Sincosta aberrans, new genus, and new species from a rodent. By Glenwood C. Roe.
Art. 17, pp. 1–3, pl. 1.

No. 2789. A synopsis of the trematode family Schistosomidae, with descriptions of new genera and species. By Emmett W. Price.
Art. 18, pp. 1–39, pls. 1–15.

No. 2791. Tapeworms of the genera Rhabdometra and Paruterina found in the quail and yellow-billed cuckoo. By Myrna F. Jones.
Art. 20, pp. 1–8, pl. 1.

No. 2792. A new species of trematode worms belonging to the genus Hasstilesia from rabbits in Texas. By Asa C. Chandler.
Art. 21, pp. 1–5, figs. 1–4.

No. 2793. Pagecrinus, a new crinoid genus from the American Devonian. By Edwin Kirk.
Art. 22, pp. 1–4, pl. 1.

No. 2794. A new species of mosquito from Montana, with annotated list of the species known from the State. By Harrison G. Dyar.
Art. 23, pp. 1–8.

No. 2795. Tertiary fossil plants from Colombia, South America. By Edward W. Berry.
Art. 24, pp. 1–12, pls. 1–5.

No. 2796. Recent Foraminifera from the west coast of South America. By Joseph A. Cushman and Betty Kellett.
Art. 25, pp. 1–16, pls. 1–5.

No. 2797. Two new species of polychaetous annelids from the Argentine coast. By A. L. Treadwell.
Art. 26, pp. 1–5, figs. 1–12.

FROM VOLUME 76 OF THE PROCEEDINGS

No. 2798. New fossil land and fresh-water mollusks from the Reynosa formation of Texas. By William B. Marshall.
Art. 1, pp. 1–6, pl. 1.

No. 2799. A revision of the two-winged flies of the genus Procecidochares in North America, with an allied new genus. By J. M. Aldrich.
Art. 2, pp. 1–13.

No. 2800. Descriptions of new species of Foraminifera of the genus Discocyclina from the Eocene of Mexico. By Thomas Wayland Vaughan.
Art. 3, pp. 1–18, pls. 1–7.

No. 2801. North American species of the weevils of the Otiorhynchid genus Mesagroicus. By L. L. Buchanan.
Art. 4, pp. 1–14, pls. 1, 2.

LIST OF PAPERS BASED WHOLLY OR IN PART ON THE COLLECTIONS IN THE UNITED STATES NATIONAL MUSEUM, PUBLISHED BY THE MUSEUM AND ELSEWHERE DURING THE FISCAL YEAR 1928–29

Aellen, Paul.

Die Chenopodium-Arten des südlichen und mittleren Afrika: Repert. Sp. Nov. Fedde, vol. 24, nos. 677–680, July 10, 1928, pp. 337–347.

Beitrag zur Systematik der Chenopodium-Arten Amerikas, vorwiegend auf Grund der Sammlung des United States National Museum in Washington, D. C.: I Repert. Sp. Nov. Fedde, vol. 26, nos. 703–708, Mar. 5, 1929, pp. 31–64.

Aldrich, J. M.

Five new parasitic flies reared from beetles in China and India: Proc. U. S. Nat. Mus., vol. 74, art. 8, no. 2753, Oct. 19, 1928, pp. 1–7.

Three new species of two-winged flies of the family Bombyliidae from India: Proc. U. S. Nat Mus., vol. 74, art. 2, no. 2747, Oct. 26, 1928, pp. 1–3.

Notes on synonymy of Diptera: Proc. Ent. Soc. Washington, vol. 30, no. 8, Nov., 1928, pp. 142–145.

New Diptera or two-winged flies from South America: Proc. U. S. Nat. Mus., vol. 74, art. 1, no. 2746, Dec. 1, 1928, pp. 1–25, figs. 1, 2.

A new species of Oedematocera with notes on Schistocercophaga Townsend (Dipt.: Tachinidae): Ent. News, vol. 39, no. 10, Dec., 1928, pp. 301–304.

Further studies of types of American muscoid flies in the collection of the Vienna Natural History Museum: Proc. U. S. Nat Mus., vol. 74, art. 19, no. 2764, Feb. 25, 1929, pp. 1–34, figs. 1, 2.

Notes on synonymy of Diptera, no. 3: Proc. Ent. Soc. Washington, vol. 31, no. 2, Feb., 1929, pp. 32–36.

Three new acalyptrate Diptera: Proc. Ent. Soc. Washington, vol. 31, no. 5, May, 1929, pp. 89–91.

A revision of the two-winged flies of the genus Procecidochares in North America with an allied new genus: Proc. U. S. Nat. Mus., vol. 76, art. 2, no. 2799, June 7, 1929, pp. 1–13.

Alexander, Charles P.

New species of crane-flies from South America. Part 2. (Family Tipulidae, order Diptera): Ann. Ent. Soc. America, vol. 21, no. 4, Dec., 1928, pp. 623–641.

New neartic crane-flies (Tipulidae, Diptera) part 13: Can. Ent., vol. 61, no. 1, Jan., 1929, pp. 15–22, figs. 1–4.

A revision of the American two-winged flies of the pyschodid subfamily Bruchomyinae: Proc. U. S. Nat. Mus., vol. 75, art. 7, no. 2778, Mar. 21, 1929, pp. 1–9, figs. 1, 2.

Anderson, Edgar.

The problem of species in the northern blue flags, Iris versicolor L. and Iris virginica L.: Ann. Mo. Bot. Gard., vol. 15, no. 3, Sept., 1928, pp. 241–332, pls. 34–44, text figs. 1–21.

Babcock, Ernest Brown.

New species of Crèpis from southern Asia: Univ. Calif. Publ. Bot., vol. 14, no. 13, Dec. 3, 1928, pp. 323–333.

Bailey, Alfred M.

A study of the snowy herons of the United States: Auk, vol. 45, no. 4, Oct., 1928, pp. 430–440, pls. 13–15.

Bailey, Florence Merriam.

Birds of New Mexico: New Mexico Department of Game and Fish; 1928, pp. i–xxiv, 1–807, pls. 1–79, figs. 1–136, maps 1–60.

Bailey, John Wendell.

A revision of the lizards of the genus Ctenosaura: Proc. U. S. Nat. Mus., vol. 73, art. 12, no. 2733, Sept. 26, 1928, pp. 1–58, pls. 1–30.

Baker, C. E. (See under C. W. Stiles.)

Ball, E. D.

A supplemental review of the genus Ophiola Edwd. (Conosanus O. & B.): Bull. Brooklyn Ent. Soc., vol. 23, no. 4, Oct., 1928, pp. 185–190.

Ball, William Howard.

Notes from Washington, D. C.: Auk, vol. 46, no. 1, Jan., 1929, pp. 121, 122.

Bangs, Outram, and James L. Peters.

Birds collected by Dr. Joseph F. Rock in Western Kansu and Eastern Tibet: Bull. Mus. Comp. Zoöl., vol. 68, no. 7, Aug., 1928, pp. 313–381, pls. 1–5, 2 figs.

A collection of birds from Oaxaca: Bull. Mus. Comp. Zoöl., vol. 68, no. 8, Oct., 1928, pp. 385–404.

Barber, H. G.

Two new Lygaeidae from the western United States. (Hemiptera-Lygaeidae). Bull. Brooklyn Ent. Soc., vol. 23, no. 5, Dec., 1928, pp. 264–268.

Bartram, Edwin B.

Costa Rican mosses collected by Paul C. Standley in 1924–1926: Contr. U. S. Nat. Herb., vol. 26, part 3, Oct. 31, 1928, pp. 51–114, figs. 1–39.

Mosses of western Mexico collected by Mrs. Ynes Mexía: Journ. Washington Acad. Sci., vol. 18, no. 21, Dec. 19, 1928, pp. 577–582, fig. 1.

Bartsch, Paul.

Odostomia (Ividella) mariae: Nautilus, vol. 42, no. 2, Oct., 1928, pp. 41, 42.

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